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AIDS

TO

MATERIA MEDICA

BY

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PREFACE TO THE THIRD EDITION

This volume of the Students Aids Series has been compiled with the object of assisting medical students reading for materia medica and pharmacological examinations It is hoped that it will also be of value to those reading for final medical examinations

The present edition follows the general plan of the previous ones but many of the sections have been transposed and drugs that have similar actions have been grouped together

The book has been completely brought up to date by the inclusion of the drugs contained in the Second Third Fourth Fifth and Sixth Addenda to the 1932 British Pharmacopœia Many non-official preparations have also been included these are in common use and will no doubt be inserted in future addenda to the B P The section on the Vitamins has been greatly expanded and the Hormones have been more fully dealt with The pharmacological sections have been revised and brought up to date

The author wishes to acknowledge his indebtedness to Hale White s Materia Medica Dixon s Manual of Pharmacology Whitla s Pharmacy Materia Medica and Therapeutics, and Clark s Applied Pharmacology in the preparation of this little book

G H NEWNS

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AIDS TO MATERIA MEDICA

INTRODUCTION

Definitions.

Materia Medica in a restricted sense is a term used to indicate the knowledge of the natural history of drugs and their recognition by their physical and chemical characters. Pharmacognosy is a synonymous term to Materia Medica used in this sense.

It is, however, frequently used in a much wider sense, and may be regarded as a generic term which includes all branches of the subject.

Pharmacy deals with the processes for making the various pharmaceutical preparations of drugs. The term also includes the dispensing of drugs.

Pharmacology is the study of the action of drugs on living tissues.

Therapeutics is the branch of medicine which deals with the treatment of disease.

Toxicology deals with the effects of doses of drugs large enough to imperil life.

The British Pharmacopœia is a standard and guide for the composition and preparation of drugs. It is authoritative throughout the British Empire. The Pharmacopœia is issued under the direction of the General Medical Council and is constituted by law. Drugs in the Pharmacopœia are said to be official.

This book is based on the 1932 edition of the Pharmacopœia and on the six Addenda published since that date. A medical man is not bound to use

only drugs found in the Pharmacopœia, nor is he obliged to adhere to the doses given.

The French Codex and the United States Pharmacopœia are other well-known pharmacopœias.

Active Principles, etc

Most medicinal plants contain active principles, which may be alkaloids, glucosides, or neutral bodies.

Alkaloids are active nitrogenous bodies, compound ammonias, one or more hydrogen atoms being replaced by various radicles. They are alkaline in reaction and combine with acids to form crystalline salts The liquid alkaloids contain only carbon hydrogen and nitrogen and are chemically amongst the group of amines. Most alkaloids however are solid and also contain oxygen such belong to the class of amides. Most alkaloids are sparingly soluble in water but readily dissolve in alcohol.

Names of alkaloids terminate in *ine* (*cf* Morphine)

The following are among the most important alkaloids

Morphine (from opium)
Atropine (from belladonna)
Quinine (from cinchona)
Strychnine (from nux vomica)
Pilocarpine (from jaborandi)
Aconitine (from the aconite root)
Apomorphine (a derivative of morphine)
Codeine (from opium)
Physostigmine or Eserine (from the Calabar bean)
Caffeine (from coffee)
Cocaine (from coca)
Hyoscyamine (from henbane)

Glucosides are also active principles with marked physiological properties. They are crystalline bodies which break down from the action of acids or enzymes into glucose and some other product thus salicin when boiled with dilute sulphuric acid yields glucose

and a substance known as saligenin The names of glucosides are recognisable by their termination *in*

The following is a list of the common glucosides

SALICIN (from the bark of various species of Salix)
SAPONIN (from the soap bark)
DIGITALIN and DIGITOXIN (from the foxglove)
STROPHANTHIN (from Strophanthus kombe)
GLYCYRRHIZIN (from the liquorice root)

Neutral Bodies These include a number of bodies of varying composition and properties. They are neither acids nor bases and possess none of the characteristics of alkaloids or glucosides Some of them such as quassin have a very bitter taste and belong to a group known as amaroids As regards nomenclature it should be noted that they end in the termination *in* like the glucosides.

The commoner neutral bodies are as follows

PICROTOXIN (from the Anamirta paniculata)
SANTONIN (from santonica)
ELATERIN (from elaterium)
JALAPIN (from scammony)
ALOIN (from aloes)

Fixed Oils are ethereal salts formed by a combination of glycerol with the higher fatty acids, usually oleic, palmitic, and stearic acids They cannot be distilled without decomposition Fixed oils are insoluble in water but soluble in ether and chloroform They remain fluid at ordinary temperatures They leave a mark when dropped on to paper (*cf* Volatile oils) Soaps are formed by the action of caustic alkalis or metallic oxides on fixed oils.

Common fixed oils are *Castor oil Cod-liver oil Linseed oil* and *Olive oil*

Fats are fixed oils which remain solid at ordinary temperatures—*e.g.*, *Adeps Oleum Theobromatis*

Volatile or Essential Oils are soluble in ether and chloroform They do not leave a mark when dropped on to paper Their odours are characteristic. Most

are prepared by distillation whereas the fixed oils are usually obtained by expression. They volatilise at ordinary temperatures.

They vary in composition. An important class is formed by the terpenes, which are hydrocarbons oil of turpentine is an example. Others are hydrocarbons containing oxygen, like oil of cinnamon sulphur is contained in oil of mustard

Resins are produced when volatile oils are oxidised. They are complex substances which are insoluble in water but soluble in alkalis and alcohol. Common resins are *Colophonium* and *Podophyllin Resin*

Oleo-resins are solutions of resins in volatile oils, occurring naturally *Copaiba* is an example

Balsams are mixtures of oleo-resins with benzoic or cinnamic acid or with both.

The common balsams are *Balsam of Peru* and *Balsam of Tolu*

Gums are exudations from certain plants.

Gum resins are plant exudations and consist of a mixture of gums and resins.

Modes of Administration of Medicines

There are many ways whereby drugs may be introduced into the system the more important being

1 By the mouth.
2 By the stomach.
3 By the rectum
4 By the skin
5. By inhalation
6 By injection.

1 If the drug be administered *by mouth* it may be given

(*a*) If a liquid, by itself or diluted with water or some other liquid or prescribed in a mixture with other ingredients, and often with something added to cover the taste

(b) If a solid it may be given in the form of a powder a pill a lozenge a confection, or in a cachet (or capsule)

2 In certain circumstances it may be necessary or desirable to introduce the drug directly into the stomach by way of a tube

3 Drugs may be administered rectally either in the form of enemata or of suppositories

4 Drugs may be given by the skin They may be prescribed as an inunction a liniment, a plaster or a poultice

Drugs may also be made to enter via the skin by means of ionisation or cataphoresis At one pole of a galvanic battery is a pad soaked with a solution of the drug As the current passes the drug enters the tissues over which the pad is laid

Liniments, plasters and poultices are usually given however for their local action alone

5 Inhalations are commonly used for their local action upon the nose and throat They also are used at times for producing the constitutional effects of a drug Thus, mercury may be introduced into the system by means of calomel vapour

6 Drugs are absorbed quickly from subcutaneous injections The fluid should be non irritating and its bulk small Intramuscular injections are more quickly absorbed and insoluble substances such as mercury or bismuth may be used The most rapid action is obtained by injecting the drug directly into a vein this method being of value in urgent cases thus an intravenous injection of strophanthin is often given in urgent cases of heart failure Intravenous injections should be warmed to body temperature (unless they are of small bulk) and administered slowly

Times of Administration of Medicines

It is often a matter of importance to give directions as to the time of the day at which medicines are to be administered

Acids are usually given after meals bismuth

carbonate is given before meals if it is employed for its local sedative action on the gastric mucous membrane.

Pepsin is given after meals, as it is intended to assist in the digestion of the food

Cod liver oil is given after food, as it would spoil the appetite if given before

Pot. permanganate is always given after meals it irritates the mucous membrane of the empty stomach

Pot. bromide when prescribed as a sedative is always given after meals or at bedtime

Iron is usually prescribed after meals especially when astringent preparations are used it has an irritant action on the stomach.

Arsenic is given after meals

Hypodermic injections of morphia should be given when the patient is in bed

Pilocarpine, given to induce sweating, should be given when the patient is in bed in a warm room

Liq ammon acet acts as a diaphoretic when the patient is warm in bed but as a diuretic when the patient is in the cold.

Sulphonal should be given two or three hours before the patient wishes to sleep as it is absorbed slowly

Frequency of Administration of Medicines

Drugs which are rapidly absorbed and excreted, such as salicylates and the sulphonamides, must be given frequently—*e.g* three or four-hourly—so as to maintain a constant concentration of the drug in the blood

Drugs which are absorbed and excreted slowly can be given less frequently Digitalis for instance is effective if given in one daily dose It is traditional rather than essential to give slowly acting drugs in three divided doses daily

Where it is desired to secure a rapid concentration of a drug in the body in order that its therapeutic effect may be exerted as early as possible large doses should be given over a short period followed by con

siderably smaller maintenance doses The sulphonamides are given in this way

In the case of cumulative drugs such as digitalis where for instance large initial doses may be necessary in a case of auricular fibrillation caution should be exercised in the administration of the maintenance dosage or otherwise cumulative toxic effects may be produced

Prescribing

Some drugs are given alone many however are given in conjunction with others to reinforce their actions to correct certain objectionable or undesired effects or to render them more palatable

A typical prescription consists of the following

1 *The Basis* —The principal active constituent.

2 *The Adjuvant* —Assists the action of the basis.

3 *The Corrective* —This corrects any undesired action

4 *The Vehicle* —Makes the prescription agreeable and palatable The volatile oils and bitters are commonly used as flavouring agents

It should be remembered that many prescriptions do not have adjuvants or correctives though most have some vehicle or other

A prescription is written as follows

1 *The Superscription* —Recipe written ℞

2 *The Inscription* —The names of the drugs in the genitive case with their doses in the accusative

3 *The Subscription* —The instructions to the dispenser often abbreviated—*e g* amount to be dispensed

4 *The Signature* (usually abbreviated to *Sig*) —The directions to the patient.

5 The name of the patient, the date and the signature of the doctor

Prescriptions may of course be written entirely in English This is an increasing practice

The 1932 British Pharmacopoeia made the following recommendation

In prescriptions the symbol ʒi is often used to represent 60 grains and also to represent 1 fluid drachm and the symbol ℥i. to represent 480 grains, sometimes 437 5 grains. As these symbols are misleading prescribers should cease to employ them. Instead of them, solids should be prescribed in grains (gr) and ounces (oz.) and liquids in minims (min.) and fluid ounces (fl. oz) In order to avoid the possibility of confusion between gramme and grain the symbol G should be used in prescriptions as a *contraction for gramme*

Incompatibility

Incompatibility may be (1) Physical (2) Chemical or (3) Pharmacological

(1) *Physical* Oil and water will not mix. Steel wine and cod liver oil are often prescribed together but they will not mix. Balsams and oils are often ordered with insufficient mucilage to emulsify them and the excess of oil floats upon the surface. A resinous tincture should not be ordered with water alone or the resin will separate and be deposited upon the sides of the bottle.

(2) *Chemical* *The following* are examples *of* chemical incompatibility

DIL. HYDROCHLORIC ACID and SAL VOLATILE

IRON PERCHLORIDE and POT IODIDE (iodine is liberated)

SULPHURIC ACID and *CHALK (carbonic* dioxide is given off and iron sulphate precipitated)

SPT ÆTHERIS NITROSI and POT IODIDE (iodide is decomposed)

ALKALOIDS are precipitated by ALKALIS SALICYLATES or TANNIC ACID

GLUCOSIDES are decomposed by FREE ACIDS.

CHLORAL and ALKALIS.

POT CHLORATE and POT IODIDE (a poisonous iodate is formed)

CALOMEL and HYDROCYANIC ACID (poisonous cyanide *of mercury is formed)*

Some drugs when mixed form an explosive compound—for example

Pot Chlorate, Tr. Ferri Perchlor. and Glycerine (when kept in a warm place)

Chromic Acid and Glycerine

Sulphuric Acid and Turpentine

Pot Permang with Glycerine

Pot Permang with Extract of Gentian (in pill form)

Certain combinations are often said to be incompatible though in reality they are not so. Thus, it is said that iron salts are incompatible with vegetable bitters (except quassia and calumba) since the tannic acid combines with the iron to form a black and unsightly iron tannate but therapeutically it is active enough and readily absorbed from the stomach

(3) *Pharmacological* As a rule a drug should not be prescribed with its antidote. There are times however when this form of incompatibility is deliberately prescribed, as when the basic drug has more than one action and a corrigens is desired to neutralise one of the undesired side-effects

Prescribing for Children

The dose should be proportionate to the child's age. Young's formula for calculating doses to be given to children is

$$\frac{\text{Age of Child}}{\text{Age of Child} + 12}$$

—e.g., for a child of six years the dose would be $\frac{6}{6+12} = \frac{1}{3}$ of the adult dose

A child above twelve may have doses not far removed from the adult ones.

The quantity should not exceed in bulk one or at the most two teaspoonfuls

The mixture should either be tasteless or else sweet children do not like bitters or acids. They usually take oils without difficulty

Children cannot swallow pills they can be made to take powders.

Belladonna, mercury and arsenic are well tolerated by children.

Opium and its preparations should be given only in the very smallest doses to young children who are very susceptible to this drug Liniments and other applications containing opium should not be used for children, and the addition of laudanum to poultices is dangerous

Children often require comparatively large doses of purgatives.

There is one particular group of remedies in which the dose for a child is the same as for an adult—the group of anthelmintics It takes as much of a vermifuge to kill a worm in a child as in an adult.

Idiosyncrasy

Some people are peculiarly susceptible to the action of certain drugs this idiosyncrasy is not easy to explain The untoward effects produced are not always identical with the toxic action of the drug

Some individuals cannot take even small doses of pot. iodide without coryza, gastric catarrh, and intense mental depression.

Some people cannot take quinine even in the smallest doses without getting singing in the ears others are equally susceptible to the action of iron.

Both ipecacuanha and colocynth produce, in a few individuals coryza and dyspnœa.

Susceptibility to bromides is not rare some people cannot take half a dozen doses without getting a well marked rash all over the body

Sodium salicylate in small doses causes tinnitus in susceptible persons.

Cumulative Action

Some drugs are excreted very slowly If these are given daily in ordinary doses, over a period of time so much of the drug may accumulate in the body

that poisonous symptoms may arise Such drugs are said to be cumulative Arsenic Mercury Lead Digitalis and Sulphonal may all produce poisoning in this way

Toleration

Toleration is readily established to the following drugs

TOBACCO	MORPHINE
ALCOHOL	ARSENIC
COFFEE	MERCURY

There are a number of mechanisms by which tolerance is established In the case of alcohol it is probably due to an increased power to oxidise the drug Morphine tolerance is partly due to an acquired immunity of the brain cells and partly to an increased power to destroy morphine Mercury and arsenic can be removed from the circulation and stored in the liver and kidneys. Toleration is a prominent feature in drug addicts.

Habit

It is not known for certain the exact mechanism by which habit formation is brought about. It may be because of the pleasant sensations induced by the drug which may have been given for some therapeutic purpose this leads to continuance of the drug which weakens the will power and so a vicious circle arises Some instability in mental constitution probably also plays a part

Opium and Morphine Heroin, Cocaine Alcohol Hashish Veronal and Sulphonal are some of the drugs which may give rise to addiction

PART I

Section I

MATERIA MEDICA OF INORGANIC SUBSTANCES

WATER

Aqua Destillata (Distilled Water)

Prepared by distillation from good natural potable water

Aqua Sterilisata (Sterilised Water)

ACTION

Cold or tepid baths cause a fall in the temperature—that is they have an antipyretic action The pulse and respiration tend to fall following a transient rise A warm bath causes an increase in pulse and respiration rate there is profuse perspiration. It also acts as a sedative

Internally water acts as a diuretic if taken in sufficient quantities. A sufficient amount of daily fluid is essential to keep the fæces soft and so prevent constipation.

OXYGEN

Oxygenium.

ACTION

Oxygen is essential to life

Oxygen inhalations are of value where the lungs are in such a condition as to render proper diffusion of oxygen into the blood slower than normal—*e g.*, in pneumonia emphysema etc. It is also used as a restorative when non respirable gases have been inspired—*e g* carbon monoxide.

HYDROGEN PEROXIDE

Liquor Hydrogenii Peroxidi

An aqueous solution of hydrogen peroxide

Dose 30–120 min –8 mil

Contains not less than 2 5% and not more than 3 3% of hydrogen peroxide

ACTION

Hydrogen peroxide is a disinfectant by virtue of the fact that it easily gives up oxygen It is of value for disinfection of the mouth It is also used to clean up dirty or sloughy wounds

CARBON DIOXIDE

Carbonei Dioxidum

ACTION

Carbon dioxide is the most powerful stimulant of the respiratory centre A mixture containing 7% of the gas is of great value when the respiration is failing or has ceased Such a percentage in the inspired air in a normal person will increase the amount of air breathed by about 600%

Solid carbon dioxide may be obtained by allowing the gas to expand suddenly The snow is used for the cure of warts, naevi, etc

IRON

Ferrum Annealed iron wire diameter 0·1 mm

PREPARATIONS

1 Syrupus Ferri Phosphatis Compositus (Parrish's Food)

Contains 0·9% of anhydrous ferrous phosphate and 1 4% of tricalcium phosphate The iron content is 0 43%.

Dose 30–120 min., 2–8 mils.

2 SYRUPUS FERRI PHOSPHATIS CUM QUININA ET STRYCHNINA (Easton's Syrup)

Contains 1 8% of anhydrous ferrous phosphate 1·00% of anhydrous quinine and 0·0246% of strychnine The iron content is 0·86%.

Dose 30–60 min 2–4 mils.

3 SYRUPUS FERRI PHOSPHATIS CUM STRYCHNINA (Easton's Syrup without Quinine)

The composition is the same as Easton's Syrup but without quinine

Dose 30-60 min 2 4 mils.

When Easton's Syrup is prescribed Syrup Ferri Phosphatis cum Strychnina should be dispensed

4 SYRUPUS FERRI IODIDI.

Contains 5% of ferrous iodide, and 1·9% of iron.

Dose 30–120 min., 2–8 mils

N.B—This preparation is unstable the iodide tending to decompose into ferrous oxyiodide and free iodine producing a yellow colour

Ferrum Redactum (Reduced Iron)

A fine powder containing not less than 80% of metallic iron

Dose 1–10 gr 0·06–0·6 G

Ferri Carbonas Saccharatus

Ferrous carbonate mixed with glucose Contains not less than 50% of ferrous salts, calculated as ferrous carbonate.

Dose 10–30 gr., 0·6–2 G

Ferri Sulphas. Pale green rhombic crystals.

Dose 1–5 gr 0·06–0·3 G

Ferri Sulphas Exsiccatus.

Ferrous sulphate minus the water of crystallisation Contains not less than 77% of anhydrous ferrous sulphate.

Dose ½–3 gr 0·03–0·2 G

PREPARATIONS

1 PILULA FERRI CARBONATIS (Blaud's Pill) Contains ferrous sulphate and sodium carbonate which react to form ferrous carbonate of which the pill contains 20%

Dose 5–15 gr., 0 3–1 G

In 30 gr (2 G) there are 3 gr (0 2 G) of iron

2 PILULA ALOES ET FERRI Contains 10% of exsiccated ferrous sulphate

Dose 4–8 gr 0 25–0 5 G

Liquor Ferri Perchloridi

Contains 15% of ferric chloride

Dose 5–15 min., 0·3–1 mil

Ferri et Ammonii Citras.

Contains 21% of iron.

Dose 20–40 gr 1 3–2·6 G

Ferri et Quininae Citras

Contains 13% of iron and 15% of anhydrous quinine.

Dose 5–15 gr 0 3–1 G

N B—The last two preparations are known as scale preparations of iron because they consist of scales, the former being dark red in colour the latter greenish yellow

Ferri Subchloridi Citratum

This is a preparation of ferrous chloride and citric acid It contains not less than 68% of ferrous iron and not more than 5 8% of ferric iron

Dose 3–5 gr., 0 2–0 3 G In 5 gr (0·3 G) there is 1½ gr (0 1 G) of iron.

Injectio Ferri.

Dose By intramuscular injection 15–30 min. 1–2 mils.

There is { 1/6 gr (0·007 G) of iron ; ½ gr (0·003 G) iron and ammonium citrate } in 30 min (2 mils)

ACTION

Iron is absorbed from the small intestine chiefly the duodenum, and is excreted into the large intestine.

Ferrous salts are most easily absorbed.

Iron salts are strongly astringent coagulating albumen For this reason they are local hæmostatics. Prolonged administration causes constipation.

Iron is an essential constituent of the hæmoglobin molecule *Minute amounts of copper are necessary* for the transformation of iron into hæmoglobin Iron restores the hæmoglobin level to normal in the hypochromic iron-deficiency group of anæmias—*e g* chlorosis Witts anæmia and the iron-deficiency anæmia of infants.

Iron is said to have a tonic effect, but the value of iron in cases other than anæmia is doubtful.

MANGANESE

Potassii Permanganas.

A compound consisting of Potassium, Manganese and Oxygen ($KMnO_4$)

Dose 1–3 gr., 0·06–0·2 G

ACTION

Externally it is a disinfectant and deodorant

It is absorbed only in very small quantities and has no important action when absorbed.

MERCURY

Hydrargyrum

Dose ½–3 gr., 0·03–0·[illegible] G By intramuscular injection ½–1 gr 0·03–0·06 G

PREPARATIONS

1 Hydrargyrum cum Creta (Grey Powder) Contains 33% of mercury and 6[illegible]% of chalk.

Dose 1–5 gr., 0·06–0·3 G

Pilula Hydrargyri (Blue Pill) Contains 33% of mercury Also glucose glycerine and liquorice

Dose 4–8 gr 0·25–0·5 G

3 Unguentum Hydrargyri (Blue Ointment) Contains 30% of mercury

4 Unguentum Hydrargyri Dilutum Contains 33 3% of mercury ointment

5 Unguentum Hydrargyri Compositum (Scott's Ointment) Contains 12% of mercury

6 Unguentum Hydrargyri Nitratis Forte. Contains the equivalent of 6·7% of mercury

7 Unguentum Hydrargyri Nitratis Dilutum

Strength [illegible]0% of strong ointment of mercuric nitrate.

8 Injectio Hydrargyri (Mercurial Cream)

Dose By intramuscular injection 5–10 min 0·3–0·6 mil There is 1 gr (0·06 G) of mercury in 10 min. (0·6 mil) of the preparation

Hydrargyri Oxidum Flavum (Yellow Mercuric Oxide)

PREPARATION

Oculentum Hydrargyri Oxidi
Strength 1%.

Hydrargyri Perchloridum (Corrosive Sublimate)
Dose 1/32–1/16 gr., 0·002–0·004 G

PREPARATION

Liquor Hydrargyri Perchloridi
Dose 30–60 min. 2–4 mils *Strength* 0·1%

Hydrargyri Subchloridum (Calomel)
Dose 1/2–3 gr 0·03–0·2 G By intramuscular injection 1/2–1 gr., 0·03–0·06 G

PREPARATIONS

1 LOTIO HYDRARGYRI NIGRA (Black Wash)
Strength 0·7%.

2 UNGUENTUM HYDRARGYRI SUBCHLORIDI
Strength 20%.

3 INJECTIO HYDRARGYRI SUBCHLORIDI
Dose By intramuscular injection 10–20 min. 0·6–1·2 mils There is 1 gr (0·06 G) of mercurous chloride in 20 min. (1·2 mils) of the preparation

Hydrargyri Iodidum Rubrum (Biniodide of Mercury)
Dose 1/32–1/16 gr., 0·002–0·004 G

PREPARATION

LIQUOR ARSENI ET HYDRARGYRI IODIDI (Donovan's Solution) Contains 1% of each iodide
Dose 5–15 min., 0·3–1 mil

Hydrargyrum Ammoniatum (White Precipitate)

PREPARATION

UNGUENTUM HYDRARGYRI AMMONIATI. Contains 5% of ammoniated mercury

Hydrargyrum Oleatum.
Contains the equivalent of 20% of mercuric oxide

PREPARATION

UNGUENTUM HYDRARGYRI OLEATI Contains 25% of mercuric oleate

Hydrargyri Oxycyanidum
Contains 20–22% of mercuric oxide and 77–79% of mercuric cyanide
Dose By intramuscular injection 1/20–1/6 gr., 0·003–0·01 G
By intravenous injection 1 gr., 0·01 G

ACTION

Several of the salts of mercury are powerful antiseptics the most potent being the perchloride and the biniodide Metallic mercury and its salts are absorbed by the skin

Mercury is excreted very slowly and is therefore a cumulative drug Excretion is chiefly via the kidneys (75%) A small proportion (25%) is excreted into the intestine It is stored chiefly in the liver and kidney

Metallic mercury and mercurous salts are purgative they may be used in small doses as intestinal antiseptics The purgative action is probably on small and large intestine peristalsis being stimulated

Calomel and metallic mercury are indirect cholagogues.

Finally mercury is an antisyphilitic.

N B—Mercury illustrates the various routes by which a drug may be given Mercury may be administered by the mouth by inunction by inhalation and by intramuscular and intravenous injection.

Symptoms of mercurial poisoning may be produced by the continued administration of mercury in therapeutic doses—*e.g.* salivation gingivitis albuminuria (due to tubular nephritis) loss of weight, etc In persons exposed for long periods to mercury vapour in addition to the above symptoms paralysis and insanity may occur

Mersalylum (Salyrgan)

This is a complex organic substance containing not more than 40 5% and not less than 38 5% of mercury

PREPARATION

INJECTIO MERSALYLI Contains 10% of mersalyl and 5% of theophylline the object of the latter being to prevent decomposition of the mersalyl

Dose 8–30 min 0 5–2 mils 30 min (2 mils) contain $\frac{1}{3}$ gr (0·2 G) of mersalyl and $1\frac{1}{2}$ gr (0·1 G) of theophylline

ACTION

The drug is a powerful diuretic and causes a great increase of chloride excretion. It acts directly on the kidneys increasing both fluid and chloride excretion The action is enhanced by the oral administration of ammonium chloride It has a low toxicity

Novasurol and Neptal are other organic mercurials with a powerful diuretic action They are not official Novasurol is much more toxic than Mersalyl or Neptal

Phenylhydrargyri Nitras (Phenylmercuric Nitrate)

ACTION

A germicide and fungicide with low toxicity Is used in very weak solutions (1 in 1 000 to 1 in 3 000) as a lotion or in ointments. Is also employed as a contraceptive

ARSENIC

Arseni Trioxidum (Arsenious Acid)

Dose $\frac{1}{60}$–$\frac{1}{12}$ gr 0 001–0 005 G

PREPARATION

Liquor Arsenicalis (Fowler's Solution) Contains 1% of arsenic trioxide.

Dose 2–8 min 0 12–0 5 mil. 8 min. (0·5 mil) contains $\frac{1}{12}$ gr (5 mg) of arsenic trioxide

N.B.—Liquor Arsenicalis is a clear colourless odourless liquid

Arseni Triiodidum (Arsenious Iodide)

Dose $\frac{1}{16}$–$\frac{1}{4}$ gr., 0·004–0·016 G

PREPARATION

Liquor Arseni et Hydrargyri Iodidi (Donovan's Solution) *Strength* 1% of each iodide

Dose 5–15 min., 0·3–1 mil.

Organic Arsenical Compounds

1 NEOARSPHENAMINA (Neosalvarsan)

Dose By intravenous injection 2½–14 gr 0·15–0·9 G The compound contains 20% of arsenic.

2 SULPHARSPHENAMINA (Sulpharsenol)

Dose By subcutaneous or intramuscular injection 1½–10 gr 0·1–0·6 G Contains approximately 20% of arsenic

3 TRYPARSAMIDE Contains 25% of arsenic.

Dose 15–30 gr 1–2 G By subcutaneous intramuscular or intravenous injection

4 ACETARSOL (Acetarsone) Contains 27% of arsenic

Dose 1–4 gr., 0·06–0·25 G

ACTION OF ARSENIC

Inorganic arsenic is an intestinal irritant and is absorbed very irregularly and is excreted both by the kidneys and the intestinal tract It is a cumulative drug when taken over a period and may produce symptoms of poisoning—*e g* pigmentation of the skin keratosis of the palms and soles conjunctivitis laryngitis and polyneuritis

Arsenic produces hyperæmia of the bone marrow but there is no evidence that it can stimulate the production of red blood corpuscles

Arsenic has a specific action on the capillaries small doses producing dilatation of the skin vessels

Small doses of arsenic exert a tonic action Large doses cause severe gastro-intestinal irritation and degeneration of the liver

The organic arsenicals are anti-syphilitics They are also used in the treatment of yaws Vincent's angina relapsing fever and rat bite fever

Neoarsphenamine destroys the trypanosomes in the blood in sleeping sickness, and is curative in the early stages

Organic arsenicals may produce toxic actions—

e.g. skin eruptions, occasionally exfoliative dermatitis, albuminuria (sometimes severe nephritis), jaundice due to hepatitis, and lastly convulsions and coma.

ANTIMONY

Antimonii et Potassii Tartras (Tartar Emetic)

Dose $\frac{1}{32}$–$\frac{1}{8}$ gr., 0·002–0·008 G.
As an emetic $\frac{1}{2}$–1 gr., 0·03–0·06 G.
By intravenous injection $\frac{1}{2}$–2 gr., 0·03–0·12 G.

Antimonii et Sodii Tartras.

Dose $\frac{1}{32}$–$\frac{1}{8}$ gr., 0·002–0·008 G.
As an emetic $\frac{1}{2}$–1 gr., 0·03–0·06 G.
By intravenous injection $\frac{1}{2}$–2 gr., 0·03–0·12 G.

ACTION

Tartar emetic is an emetic acting locally on the stomach; it produces considerable depression. In subemetic doses it is an expectorant. It is also a diaphoretic. Like arsenic, antimony has a specific action on capillaries, in small doses dilating the skin capillaries. Antimony is excreted mainly in the urine and to a small extent in the fæces. Antimony salts and organic compounds of antimony are used in the treatment of *Trypanosomiasis, Bilharziasis*, and Leishmaniasis.

Large doses produce severe gastro-intestinal irritation, cardiac depression and depression of the central nervous system.

Stibophenum.

Dose $1\frac{1}{2}$–5 gr., 0·1–0·3 G.

Stibophen is an organic antimony compound; it contains 15·6–16·0% of trivalent antimony and 16·5–16·9% of sulphur.

ACTION

Stibophen is chiefly employed in the treatment of schistosomiasis, but it is also used in undulant fever. It is less toxic than tartar emetic, but it may occa-

sionally cause nausea vomiting vertigo and epigastric pain It is also cumulative and may have a harmful effect on the liver if the course is a prolonged one

LEAD

Plumbi Monoxidum (Litharge)

PREPARATION

EMPLASTRUM PLUMBI (Diachylon) Contains lead oxide and olive oil which react to form lead oleate

Plumbi Acetas (Sugar of Lead)

Dose ½–2 gr 0·03–0·12 G

PREPARATIONS

1 SUPPOSITORIUM PLUMBI CUM OPIO Contains 3 gr (0·2 G) of lead acetate and 1 gr (0·06 G) of opium

2 LIQUOR PLUMBI SUBACETATIS FORTIS (Goulard's Extract) Contains 25% of lead subacetate and from 19–21 5% of total lead

3 LIQUOR PLUMBI SUBACETATIS DILUTUS (Goulard's Lotion) Contains 1·25% of the strong solution

ACTION OF LEAD

Lead is absorbed with difficulty from the gut and is excreted chiefly by the colon but partly also in the urine. It is deposited in the trabeculæ of the bones.

Lead and its salts have a precipitating action on protein and are therefore astringents and hæmostatics They have this action in the alimentary canal as well as externally on the abraded skin ulcers and sores

Lead stimulates plain muscle and produces intestinal colic contractions of the uterus frequently cause abortion These last actions are the result of toxic doses Lead salts produce marked constipation

Lead is strongly cumulative and very small doses

may produce poisoning, symptoms of which are anæmia colic peripheral neuritis arterio-sclerosis and interstitial nephritis.

ZINC

Zinci Oxidum

Dose 5–10 gr 0 3–0·6 G as a pill or tablet.

PREPARATIONS

1 UNGUENTUM ZINCI OXIDI ANHYDROSUM Contains 15% of zinc oxide.

2 PASTA ZINCI OXIDI COMPOSITA Contains 25% of zinc oxide, 25% starch and 50% soft paraffin

3 GELATINUM ZINCI (Unna's Paste) Contains 15% zinc oxide 15% gelatin 35% glycerin and 35% distilled water

Zinci Chloridum.

Zinci Sulphas.

Dose As an astringent 1–3 gr., 0·06–0·2 G As an emetic 10–30 gr., 0·6–2 G

Zinci Stearas.

Contains zinc equivalent to not less than 13% and not more than 15 5% of zinc oxide.

Unguentum Zinci Oleatis.

ACTION

Zinc salts are astringent and hæmostatic, both externally on the broken skin and on ulcers and in the alimentary canal

Zinc sulphate is an emetic, acting locally on the stomach its action is a rapid one

COPPER

Cupri Sulphas (Blue Vitriol)

The substance consists of deep blue crystals

Dose As an astringent ¼–2 gr., 0·016–0·1 G As an emetic 5–10 gr 0 3–0·6 G

ACTION

In strong solutions copper sulphate is a powerful caustic.

In dilute solutions it is an astringent and hæmostatic, both externally and in the alimentary canal. It is also an antiseptic and an emetic. As an emetic it has a rapid action and acts locally on the stomach.

Recent experiments have shown that small amounts of copper are necessary for the transformation of iron into hæmoglobin.

SILVER

Argenti Nitras (Lunar Caustic)

Dose 1/8–1/4 gr., 0·008–0·016 G

Argenti Nitras Induratus.

Contains not less than 94% and not more than 96% of silver nitrate.

Argentoproteinum (Silver Proteinate, Protargol)

This is a compound of silver and protein. It contains not less than 7·5% and not more than 8·5% of silver.

ACTION

Silver nitrate is a caustic; solutions are astringent, hæmostatic, and antiseptic. Silver proteinate is less irritating than the inorganic salts, but it is not so powerful an antiseptic.

BISMUTH

Bismuthum Præcipitatum

Dose By intramuscular injection 1½–3 gr. 0·1–0·2 G

Contains not less than 98·5% of metallic bismuth.

PREPARATION

INJECTIO BISMUTHI

Dose By intramuscular injection 8–15 min. 0·5–1 mil. *Strength* 20%. There are 3 gr (0·2 G) of bismuth in 15 min (1 mil) of the preparation.

Bismuthi Carbonas (Bismuth Oxycarbonate)

Dose 10–30 gr 0·6–2 G

PREPARATION

TROCHISCUS BISMUTHI COMPOSITUS. Contains 15% of bismuth carbonate 15% of heavy magnesium carbonate and 30% of calcium carbonate

Bismuthi Salicylas.

Dose 10–30 gr 0·6–2 G By intramuscular injection 1–2 gr 0·06–0·12 G

PREPARATION

INJECTIO BISMUTHI SALICYLATIS *Strength* 10%

Dose By intramuscular injection 10–20 min., 0·6–1·2 mil There are 2 gr (0·12 G) of bismuth in 20 min. (1·2 mil) of the injection.

Bismuthi et Sodii Tartras (Sodium Bismuthyltartrate)

Contains not less than 35% and not more than 42% of bismuth.

Dose By intramuscular injection 1–3 gr., 0·06–2 G

Bismuthi Oxychloridum (Bismuth Subchloride)

Contains 80% of bismuth.

Dose 10–30 gr., 0·6–2 G By intramuscular injection 1½–3 gr., 0·1–0·2 G

PREPARATION

INJECTIO BISMUTHI OXYCHLORIDI *Strength* 10%

Dose By intramuscular injection 15–30 min 1–2 mils

Bismuthi Subgallas

Dose 10–30 gr 0·6–2 G

ACTION

Bismuth carbonate neutralises the hydrochloric acid of gastric juice It is used as an anti acid in gastric and duodenal ulcer Bismuth salts have an astringent action on the gastro-intestinal tract they also form a protective layer on the mucous membrane

Bismuth is slowly absorbed and excreted chiefly in the urine In the gut it is converted into a black insoluble sulphide

It is an antisyphilitic and for this purpose is given by intramuscular injection

IODINE AND THE IODIDES

Iodum (Iodine)

Obtained chiefly from kelp the ashes of seaweed

PREPARATIONS

1 Liquor Iodi Fortis Contains 10% of iodine and 6% of potassium iodide dissolved in alcohol

2 Liquor Iodi Mitis Contains 2 5% iodine and 1 5% of potassium iodide, dissolved in alcohol

Dose 5–30 min, 0·3–2 mils

3 Liquor Iodi Simplex Contains 0% of iodine dissolved in alcohol.

Dose 3–15 min 0·2–1 mil

4 Liquor Iodi Aquosus (Lugol s Solution) Contains 5% of iodine and 10% of potassium iodide dissolved in distilled water

Dose 5–15 min., 0 3–1 mil.

Potassii Iodidum

Dose 5–30 gr., 0·3–2 G

A low intake diminishes the rate of excretion and a high intake increases it

BROMISM Due to prolonged administration of bromides Mental depression, deficient memory muscular weakness and skin rashes are the chief manifestations

CHLORINE

Calx Chlorinata (Chlorinated Lime, Bleaching Powder)

PREPARATION

LIQUOR SODÆ CHLORINATÆ CHIRURGICALIS (Dakin s Solution)

The constituents are chlorinated lime sodium carbonate, and boric acid

The preparation contains not less than 0·5% and not more than 0·55% of available chlorine.

Chloramina (Chloramine-T)

Prepared by the action of sodium hypochlorite and *p*-toluensulphonamide.

ACTION

Chlorine is a powerful antiseptic, disinfectant and deodorant.

Inhalation of the gas causes severe congestion and œdema of the lungs.

SODIUM

Sodii Hydroxidi.

PREPARATION

LIQUOR SODII HYDROXIDI

Contains 3 56% w/v of total calculated as sodium hydroxide

Sodii Carbonas (Washing Soda)

Dose 5–15 gr., 0·3–1 G

Sodii Carbonas Exsiccatus

Dose 2–5 gr., 0·12–0·3 G

Sodii Bicarbonas.

Dose 15–60 gr., 1–4 G

Sodii Phosphas

Dose 30–240 gr., 2–16 G

Sodii Phosphas Effervescens.

Dose 60–240 gr., 4–16 G *Strength* 50% sodium phosphate.

Sodii Phosphas Acidus.

Contains not less than 70% of sodium dihydrogen phosphate

Dose 30–60 gr., 2–4 G

Sodii Sulphas (Glauber's Salts)

Dose 30–240 gr., 2–16 G

Sodii Sulphas Effervescens

Dose 60–240 gr., 4–16 G *Strength* 50% of sodium sulphate

Sodii Sulphas Exsiccatus.

Dose 15–120 gr., 1–8 G

Sodii et Potassii Tartras (Rochelle Salt)

Dose 120–240 gr., 8–16 G

PREPARATION

PULVIS EFFERVESCENS COMPOSITUS (Seidlitz Powder)

No 1 Sodium potassium tartrate 7.5 G Sodium bicarbonate 2.5 G

No 2 Tartaric acid 2.5 G

No. 1 powder is dissolved in warm water and then No. 2 powder is added

Sodii Citras.

Dose 15–60 gr., 1–4 G

Sodii Chloridum (Common Salt)

PREPARATION

LIQUOR CALCII HYDROXIDI (Lime Water) Contains 0·15% of calcium hydroxide.

Dose 1–4 fl. oz., 30–120 mils.

Creta (Prepared Chalk)

Dose 15–60 gr., 1–4 G

PREPARATIONS

1 PULVIS CRETÆ AROMATICUS Contains 25% of prepared chalk.

Dose 10–60 gr., 0·6–4 G

2 PULVIS CRETÆ AROMATICUS CUM OPIO Contains 97·5% of aromatic chalk powder and 2·5% of powdered opium.

Dose 10–60 gr., 0·6–4 G

3 HYDRARGYRUM CUM CRETA. Contains 1 part of mercury to 2 of prepared chalk.

Dose 1–5 gr 0·06–0·3 G

Calcii Carbonas (Precipitated Chalk)

Dose 15–60 gr., 1–4 G

Calcii Chloridum.

Dose 10–30 gr 0·6–2 G
By intramuscular injection ½–1½ gr., 0·03–0·1 G
By intravenous injection 5–15 gr., 0·3–1 G

Calcii Chloridum Hydratum (Hydrated Calcium Chloride)

Dose By intramuscular injection, 1–3 gr., 0·06 to 2 G
By intravenous injection 10–30 gr 0·6–2 G

Calcii Lactas.

Dose 15–60 gr., 1–4 G

Calcii Phosphas.

Dose 10–30 gr., 0·6–2 G

Calcii Gluconas.

The calcium salt of gluconic acid

Dose 30–60 gr., 2–4 G

PREPARATION

INJECTIO CALCII GLUCONATIS

Dose 150 300 min 10 0 mils.

There are 30 gr (2 G) in 300 min (0 mils of the preparation)

ACTION

Calcium is found in the body almost entirely in the bones (99%) It is absorbed with difficulty from the gut nly about 50% of the amount ingested being absorbed It is chiefly excreted into the colon a small amount appearing in the urine Vitamin D is necessary for normal absorption As calcium requirements are much higher in infants and growing children and in pregnancy and lactation much more vitamin D is required at these periods of life to ensure an adequate calcium intake

Injected intravenously calcium stimulates plain muscle (*cf* Barium) Calcium is believed to check exudation from capillaries

Calcium Carbonate is a mild astringent externally and also in the stomach and intestines Lime water has a similar action internally Calcium Chloride has a similar diuretic action to that of Ammonium Chloride The Gluconate and Chloride are given intravenously for hypocalcæmia and tetany

MAGNESIUM

Magnesii Oxidum Leve (Light Magnesium Oxide)

Dose 10–60 gr 0·6–4 G

Magnesii Oxidum Ponderosum (Heavy Magnesium Oxide)

Dose 10–60 gr 0·6–4 G

Mistura Magnesii Hydroxidi.

Contains 8·25% of magnesium hydroxide
Dose 60–240 min. 4–16 mils.

Magnesii Sulphas *(Epsom Salts)*
Dose 30–240 gr., 2–16 G

PREPARATION

MISTURA SENNAE COMPOSITA Contains 25% magnesium sulphate For dose see Senna.

Magnesii Carbonas Levis.
Dose 10–60 gr 0·6–4 G

Magnesii Carbonas Ponderosus.
Dose 10–60 gr 0·6–4 G

PREPARATION

LIQUOR MAGNESII BICARBONATIS (Fluid Magnesia)
Dose 1–2 fl. oz., 30–60 mils. There are 15 gr (1 G) of magnesium carbonate in 2 fl. oz. (60 mil) of the preparation.

Magnesii Trisilicas.
Dose 5–30 gr., 0·3–[illegible] G

ACTION

Magnesium is slowly absorbed from the intestine and rapidly excreted by the kidneys Magnesium salts especially the sulphate are strong saline purgatives.

Magnesium oxide neutralises the acid of gastric juice being a very effective anti-acid Magnesium trisilicate is also a very good anti acid

Magnesium sulphate is a cholagogue its entry into the duodenum exciting contraction and emptying of the gall bladder

Intravenous injection of soluble salts produces paralysis of the whole central nervous system and also

of the motor nerve ending This action is completely antagonised by calcium This effect is utilised in the treatment of eclamptic convulsions

BARIUM

Barii Chloridum.

Dose ⅛–½ gr 0·03–0·12 G

Barium chloride is in the appendix of the Pharmacopœia for use for testing purposes It is however given internally as well

Barii Sulphas.

ACTION

Barium salts increase the excitability of heart muscle They also stimulate plain muscle throughout the body As a result, the heart beats more forcibly the vessels are constricted thus causing a rise in blood pressure There is also increased intestinal peristalsis.

Barium sulphate is opaque to X rays and in consequence is used in X ray work on the alimentary tract.

Barium chloride is used in Stokes-Adams attacks for its stimulant action on the heart muscle.

ALUMINIUM

Alumen (Purified Alum)

Potassium aluminium sulphate (potassium alum) or ammonium aluminium sulphate (ammonium alum)

Dose 5–10 gr 0·3–0·6 G

PREPARATION

Glycerinum Aluminis.

Dose 30–60 min. 2–4 mils Strength 16·6%

Kaolinum Leve (Light Kaolin)

A purified native *aluminium silicate* free from gritty particles.

Dose ½–2 ozs. 15–60 G

Kaolinum Ponderosum (Heavy Kaolin)

A native aluminium silicate powdered and freed from gritty particles.

PREPARATION

CATAPLASMA KAOLINI Contains 52·7% of kaolin.

ACTION

Alum is an astringent and hæmostatic both externally and in the gastro-intestinal tract. Kaolin is used internally as an astringent

CHROMIUM

Chromii Trioxidum (Chromic Acid)

ACTION

Chromic acid is a powerful deodorant and disinfectant It is a caustic for it coagulates albumen and oxidises organic matter Internally it is an astringent and irritant.

SULPHUR

Sulphur Sublimatum (Flowers of Sulphur)

Dose 15–60 gr 1–4 G

PREPARATION

UNGUENTUM SULPHURIS Contains 10% of sulphur

Sulphur Præcipitatum (Milk of Sulphur)

Dose 15–60 gr., 1–4 G

PREPARATION

CONFECTIO SULPHURIS Contains 45% of sulphur

Dose 60–120 gr 4–8 G

Potassa Sulphurata (Liver of Sulphur)

A mixture of salts the chief being potassium sulphide

Sodii Thiosulphas (Sodium Hyposulphite)

Dose 5–15 gr 0.3–1 G By subcutaneous intramuscular or intravenous injection.

Sodii Metabisulphis (Sodium Bisulphite)

Strength 90%

ACTION

Sulphur is a mild laxative by virtue of the formation of small amounts of sulphuretted hydrogen which produces a mild irritation of the intestine

Externally sulphur is a parasiticide again because of the formation of some sulphuretted hydrogen The ointment is chiefly used in the treatment of scabies.

Sodium thiosulphate is used as a remedy in poisoning by heavy metal—*e.g.* bismuth mercury arsenic

Sodium bisulphite is a mild antiseptic it is chiefly used as a food preservative

HYDROCYANIC ACID

Acidum Hydrocyanicum Dilutum (Dilute Prussic Acid)

Contains 2% by weight of hydrogen cyanide

Dose 2–5 min. 0.12–0.3 mil

ACTION

Externally hydrocyanic acid is a general protoplasmic poison. It paralyses sensory nerve endings and has therefore a local anæsthetic action It has a sedative and anæsthetic effect on the stomach

The drug is very rapidly absorbed from mucous membranes and from raw surfaces.

The central nervous system is first stimulated and

Kaolinum Ponderosum (Heavy Kaolin)

A native aluminium silicate powdered and freed from gritty particles

PREPARATION

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Sulphur Præcipitatum (Milk of Sulphur)

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Dose 2–5 min., 0.12–0.3 mil

ACTION

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The drug is very rapidly absorbed from mucous membranes, and from raw surfaces.

The central nervous system is first stimulated and

then depressed the medulla being first affected There is a brief vaso-constriction and rise of blood pressure *followed* by vaso-dilatation and a profound fall in blood pressure. Respiration is quickened but is soon depressed death resulting from asphyxia. Slowing of the heart rate is due to a stimulant action on the vagus centre large doses directly paralyse the heart.

Hydrocyanic acid prevents the tissues from absorbing oxygen from the blood at death therefore the blood is bright red. In non lethal doses it has little effect on the blood. The addition of prussic acid to drawn blood causes the formation of cyanhæmatin, which has a bright red colour

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Section II

MATERIA MEDICA OF ORGANIC SUBSTANCES INCLUDING SYNTHETIC DRUGS HORMONE PREPARATIONS VACCINES AND ANTITOXINS

ALCOHOLS AND ANÆSTHETICS

ETHYL ALCOHOL

Alcohol Dehydratum (Absolute Alcohol)

Contains not less than 99% by weight of alcohol.

Alcohol (95%)

Is a mixture of ethyl alcohol and water

Diluted Alcohols

The *official* dilute alcohols contain 90%, 80%, 70%, 60%, 50%, 45%, 25%, and 0% respectively of ethyl alcohol. The 90% alcohol is also known as Spiritus Rectificatus (Rectified Spirit)

ACTION

Alcohol acts as an antipyretic by depressing the activity of the heat regulating centre and by increasing heat loss Large doses also lower the temperature in health

Alcohol slightly increases the metabolic rate It should be noted however that it has a very limited value as a food It is of some value in cases of fever when the absorption of ordinary foods is greatly impaired

Externally alcohol is a skin disinfectant it also hardens the skin by precipitating proteins

Alcohol is very rapidly absorbed partly in the stomach (25%) and partly in the upper part of the small intestine (75%) It is excreted slowly after oxidation to carbon dioxide and water Small amounts (about 2%) are excreted as alcohol in the breath and urine

Alcohol depresses the functions of the whole central nervous system proceeding from the highest levels to the lowest. The speed and accuracy of reflex responses is decreased the highest inhibitory reflexes being affected first thus self-criticism judgment, etc are impaired early Later muscular power is impaired speech being first affected the spinal cord is depressed and finally complete paralysis and coma ensue large doses may cause death from depression of the respiratory centre

Small doses increase the flow of saliva and also of the gastric juice. The latter effect is caused—(1) Reflexly by stimulation of the taste nerves in the mouth. (2) Directly by stimulation of the fundus of the stomach. In the chronic alcoholic, alcohol causes atrophy of the mucous membrane and loss of appetite

Concentrated solutions when taken by the mouth produce reflex acceleration of the pulse and respiration Small doses slightly stimulate the respiratory centre, which however is soon depressed when the dose is increased There is an initial reflex rise of blood pressure which is transient. The vaso-motor

centre is not stimulated The cutaneous vessels dilate producing an increase in the rate of heat loss giving a subjective feeling of warmth.

The heart is not stimulated by alcohol which exerts a purely depressant action on this organ

METHYL ALCOHOL

Spiritus Methylatus Industrialis.

Is a mixture of 19 volumes of alcohol (95%) with 1 volume of approved wood naphtha. It contains 10% of methyl alcohol.

ACTION

Methyl alcohol is oxidised very slowly formic acid being the chief product it is excreted as formates. It has a cumulative action, large doses causing coma lasting for several days. Optic neuritis is of frequent occurrence.

AMYL ALCOHOL

Amyleni Hydras.

Dose 30–60 min 2–4 mils.

ACTION

Amylene hydrate is a hypnotic. Before hypnosis a stage of excitement may occur

TRIBROMOETHYL ALCOHOL

Alcohol Tribromoethylicum.

Dose By rectal injection as a basal anæsthetic ½–⅔ gr per pound of body weight 0·075–0·1 G per kg of body weight.

Bromethol (Solution of Tribromoethyl Alcohol) **Avertin.**

A solution of ⅔ by weight of tribromoethyl alcohol in ⅓ by weight of amylene hydrate.

Dose By rectal injection as a basal anaesthetic 1/2 3/4 min per pound of body weight 0·075–0·1 mil per kg of body weight It is administered in a 2 5% solution in distilled water

ACTION

0–50% of avertin is absorbed in 20 minutes It is detoxicated in the liver where it is combined with glycuronic acid to form urobromic acid This compound is inert and is rapidly excreted by the kidneys It is dangerous to give avertin to patients with impaired liver function or renal disease

Avertin is used as a basal narcotic, gas and oxygen being used to obtain full narcosis In large doses it slows the heart rate and weakens the force of contraction The blood pressure falls Toxic doses paralyses the respiratory centre

Alcoholia Lanæ (Wood Alcohols)

Wood alcohols may be prepared by the saponification of the grease of the wool of sheep and the separation of the fraction containing cholesterol and other alcohols It contains not less than 28% of cholesterol

PREPARATION

UNGUENTUM ALCOHOLIUM LANÆ *Strength* 6%

CHLOROFORM

Chloroformum (Trichlormethane)

Dose For internal administration 1–5 min., 0·06–0 3 mil

PREPARATIONS

1 AQUA CHLOROFORMI

Dose 1/2–1 fl. oz., 15–30 mils. *Strength* 0·25%

2. SPIRITUS CHLOROFORMI

Dose 5–30 min 0·3–2 mils. *Strength* 5%.

2 In the concentration required, ether causes much more irritation to the air passages than chloroform This produces over ventilation of the lungs and consequent lowering of the CO_2 tension in the blood This alkalosis causes irregular respiration. Ether also provokes a profuse secretion of mucus.

3 It is much more difficult to *induce* anæsthesia with ether

4 Ether has little toxic action on the heart.

5 It has a less depressing effect than chloroform on the respiratory and vaso-motor centres.

6 *Ether injures the liver and kidneys to some* extent but delayed poisoning does not occur Post anæsthetic pulmonary complications are common.

Given by the mouth ether is a carminative. It reflexly accelerates the heart and causes a rise in blood pressure. It has no direct stimulant action on the heart.

NITROUS OXIDE

Nitrogenii Monoxidum (Laughing Gas)

ACTION

Nitrous oxide is a general anæsthetic. A concentration of at least 80% of the gas is necessary to produce anæsthesia. The stages are passed through rapidly and unconsciousness soon supervenes The breathing becomes stertorous and later irregular and jerky there is marked cyanosis the blood pressure rises considerably owing to the asphyxia. The eyes are fixed the pupils dilated and the corneal reflex absent. Complete muscular relaxation does not occur Administration must be stopped at this stage or asphyxia will supervene Anæsthesia lasts about 40–50 seconds. Loss of emotional control often occurs, giving rise to the paroxysmal laughing from which the gas derives its popular name Prolonged anæsthesia can be maintained by giving a mixture of 90% nitrous oxide and 10% oxygen by a special

apparatus There is no fall of blood pressure and no depression of respiration The after-effects are mild

ETHYL CHLORIDE

Æthylis Chloridum

A volatile liquid which boils at 5o C.

ACTION

It is a local and general anæsthetic. When sprayed on the skin it evaporates giving rise to intense cold which freezes the superficial tissues.

General anæsthesia is produced very rapidly but is difficult to maintain for more than a few minutes. It has a toxic effect on the heart when given in large doses but it is not so great as that of chloroform It is used chiefly for inducing anæsthesia or for short operations particularly in children

ETHYLENE

Æthylenum

N.B.—A mixture of ethylene and oxygen is explosive

ACTION

Ethylene is a general anæsthetic and is a more powerful one than nitrous oxide Sufficient muscular relaxation for most operations can be obtained by giving a mixture containing 90% of ethylene and 10% of oxygen A mixture of 80% ethylene and 20% oxygen will give a light anæsthesia There is no cyanosis with these mixtures. Ethylene does not cause irritation of the respiratory passages.

ANTISEPTICS

PHENOL

Phenol (Carbolic Acid)

A substance obtained from coal tar

Dose 1–3 gr 0·06–0·2 G in capsules.

PREPARATIONS

1 Phenol Liquefactum

Dose 1–3 min. 0·06–0·2 mil. *Strength* 80%

2. Glycerinum Phenolis. *Strength* 16·6%.

3 Suppositorium Phenolis Contains 1 gr (0·06 G) of phenol.

4 Trochiscus Phenolis. Contains ½ gr (0·03 G) of phenol.

5. Unguentum Phenolis. *Strength* 3%

ACTION

Phenol is an antiseptic, disinfectant and deodorant Its activity is not markedly reduced by the presence of organic matter It should be noted that phenol *is inactive when dissolved in oil. In* moderate or weak solution it produces local anæsthesia, whereas in strong solution it is a caustic. Prolonged application of solutions to the skin may cause gangrene Internally in small doses phenol stimulates gastric secretion and has a carminative action.

Phenol is easily absorbed from wounds and mucous membranes as well as from the alimentary tract. Oxidation products such as pyrocatechin and hydroquinone appear in the urine and colour it brown

Large doses produce severe gastro-intestinal irritation. If absorbed it exerts a toxic action on the *central nervous system*

The motor horn cells are first stimulated causing convulsions, and then depressed paralysis resulting

The vaso-motor and respiratory centres are paralysed Death results from respiratory failure

TRINITROPHENOL

Trinitrophenol (Picric Acid)

A bright yellow crystalline powder

ACTION

Is a strong antiseptic Internally it is a gastro-intestinal irritant.

CRESOL

Cresol.

A mixture of cresols and other phenols obtained from coal tar

Dose 1–3 min 0·06–0·2 mil in capsules.

PREPARATION

LIQUOR CRESOLIS SAPONATUS (Lysol) Contains 50% of cresols.

ACTION

An antiseptic and disinfectant

Chlorocresol.

ACTION

Chlorocresol is an antiseptic and germicide It is powerfully bactericidal and possesses low toxicity

BETANAPHTHOL

Betanaphthol.

Dose 5–10 gr., 0 3–0·6 G in a cachet.

ACTION

Is a powerful antiseptic and germicide Is used as an intestinal antiseptic.

CREOSOTE

Creosotum.

Obtained by the distillation of beech tar

Composition A mixture of creosol, guaiacol, and other phenols.

Dose 2–10 min., 0·12–0·6 mil It may be taken in capsules diluted with three times its volume of olive oil.

ACTION

Creosote is a powerful deodoriser and antiseptic. It promotes expectoration. It is employed by inhalation in septic lung conditions.

GUAIACOL

Guaiacol.

Obtained from beech tar creosote or synthetically

Dose 5–10 min. 0·3–0·6 mil.

ACTION

Externally guaiacol is an antiseptic.

RESORCIN

Resorcinol.

Dose 1–5 gr., 0·06–0·3 G

ACTION

Is an antiseptic. Is used for removing scales in certain skin diseases.

CHLOROXYLENOL

Chloroxylenol.

PREPARATION

Liquor Chloroxylenolis (Roxenol) Contains 5% of liquor chloroxylenolis and 10% of terpineol

ACTION

A powerful antiseptic and germicide

ACRIFLAVINE

Acriflavina.

A coal tar product Is a brick red powder used in a 1 in 1 000 solution

ACTION

Acriflavine is a powerful antiseptic it is of especial value as a wound antiseptic but must be left in contact with the wound for some time It is used in urethral infections by injection per urethra It acts as a urinary antiseptic when given by the mouth acting more strongly in an alkaline urine

Proflavinæ Sulphas (Proflavine)

An orange-red to brownish yellow powder

ACTION

Like acriflavine it is a powerful antiseptic and for this purpose is generally used in a 1 in 1 000 solution

METHYLENE BLUE

Methylthioninæ Chloridum.

Dose 1–5 gr 0·06–0·3 G in pill cachet or capsule

ACTION

Is a mild antiseptic. It is also used for testing renal function

N.B.—Methyl Violet Brilliant Green Malachite Green are amongst other dyes which are employed therapeutically chiefly as mild antiseptics They are also used internally—*e g* Gentian Violet is an effective treatment for threadworms None of these drugs are yet official

FORMALDEHYDE

Liquor Formaldehydi (Formalin)

An aqueous solution containing not less than 37% and not more than 41% of formaldehyde

ACTION

It is an antiseptic, disinfectant, and preservative. It is a powerful irritant to the conjunctiva and the upper air passages.

HEXAMINE

Hexamina (Urotropin, Hexamethylenetetramine)

A compound of formaldehyde and ammonia.
Dose 10–30 gr 0·6–2 G

ACTION

Hexamine is rapidly absorbed and excreted unchanged in the urine. In the presence of acid it is broken down into ammonia and formaldehyde in an acid urine hexamine is therefore an antiseptic. Some hexamine is decomposed by acid in the stomach If it is given however when the stomach is empty it passes through rapidly Acid sodium phosphate *may be given separately to make the urine acid*

Hexamine sometimes irritates the kidneys and causes hæmaturia.

The drug is excreted into the bile and cerebrospinal fluid, but these are both feebly alkaline, and it cannot therefore exert an antiseptic action.

MANDELIC ACID

Acidum Mandelicum (Phenylglycollic Acid)
Dose 15–45 gr 1–3 G four times daily

Ammonii Mandelas.
Dose 50 gr., 3–4 G four times daily

Calcii Mandelas.
Dose 50 gr., 3–4 G four times daily

Sodii Mandelas.
Dose 50 gr., 3–4 G four times daily

ACTION

Only mandelic acid is an official preparation Both it and its salts are powerful urinary antiseptics being most effective against the *Bacillus coli* It has no effect in pyelitis due to *B proteus* which owing to its splitting action on urea keeps the urine alkaline

Mandelic acid is only effective in very acid urine the *p*H of which should be round about 5 4 When mandelic acid or sodium mandelate is used ammonium phosphate or ammonium chloride must be given (5–15 gr four times a day) to make the urine sufficiently acid Ammonium and calcium mandelate however besides acting as an antiseptic render the urine acid enough and there is as a rule no necessity to give ammonium salts

BORAX AND BORIC ACID

Borax (Sodium Borate)

Dose 5–15 gr 0 3–1 G

PREPARATIONS

1 Glycerinum Boracis

Dose 30–60 min., 2–4 mils. *Strength* 12%.

2 Mel Boracis. Contains borax (10%) honey and glycerin.

Acidum Boricum (Boracic Acid)

Dose 5–15 gr., 0·3–1 G

PREPARATIONS

1 Glycerinum Acidi Borici

Dose 10–30 min 0·6–2 mils *Strength* 31%.

2 Unguentum Acidi Borici *Strength* 10%.

ACTION

Borax and boric acid are very mild antiseptics they check putrefaction Large doses may produce gastro-intestinal irritation and albuminuria Because

of these effects its use as a food preservative is now prohibited in England and the U.S.A

Boric acid is a feeble urinary antiseptic, acting best in an alkaline urine.

IODOFORM

Iodoformum.

Consists of lemon-coloured hexagonal crystals. Contains 96·7% of iodine.

Dose ½–3 gr 0·03–0·2 G

PREPARATIONS

1 Suppositorium Iodoformi Contains 3 gr (0·2 G) of iodoform in each

2 Oculentum Iodoformi *Strength* 4%.

ACTION

It has practically no antiseptic power *in vitro* but in contact with proteins free iodine is liberated. Iodoform when absorbed in small doses causes confusion and headache in larger doses, hallucinations and delirium

ICHTHAMMOL

Ichthammol (Ichthyol)

Ammonium ichthosulphonate, prepared from the destructive distillation of fossil fish deposits and treated with ammonium sulphate and water

Dose 5–10 gr 0·3–0·6 G

ACTION

Is a mild antiseptic and has an irritant action on the skin. It is used in the treatment of certain skin diseases.

CHRYSAROBIN

Chrysarobinum

A mixture of substances extracted from araroba, which is obtained from the trunks of *Andira araroba*

PREPARATION

UNGUENTUM CHRYSAROBINI Contains 4% chrysarobin

ACTION

Externally chrysarobin is a strong irritant internally it is a gastro-intestinal irritant It is used in the treatment of psoriasis and as an antiparasitic in ringworm

DITHRANOL

Dithranol (Dioxyanthranol Cignolin)

PREPARATION

UNGUENTUM DITHRANOLIS *Strength* 0·1%

ACTION

Dithranol possesses properties similar to those of chrysarobin but is very much more active and not so toxic. It is used in the treatment of psoriasis and other chronic skin conditions

HYPNOTICS AND NARCOTICS

CHLORAL HYDRATE

Chloralis Hydras.

A derivative of ethane

Dose 5–20 gr., 0·3–1·2 G

ACTION

Chloral is a gastric irritant giving rise to vomiting It is quickly absorbed it is excreted as urochloralic acid, which is an inert compound

Chloral is a powerful hypnotic. In large doses it has a depressant action on the heart and depresses the vaso-motor centre, causing a fall in blood pressure. Later the respiratory centre is depressed and death may result from respiratory failure

CHLORBUTOL

Chlorbutol (Chlor butyl-alcohol, Chloretone)

Dose 5–20 gr 0·3–1 2 G

ACTION

Resembles chloral in its action It is not an irritant to the stomach on the contrary it has a local anæs thetic action, being used as a gastric sedative. It is also used often with success, as a remedy for sea sickness.

PARALDEHYDE

Paraldehydum.

A product of the polymerisation of acetaldehyde.

Dose 30–120 min. 2–8 mils.

ACTION

Paraldehyde is a strong hypnotic it acts rapidly and has no unpleasant after-effects. It does not produce depression of the heart and only in very large doses does it cause depression of the medullary centres Its disadvantages are that it has a very unpleasant taste and is partly excreted by the lungs, thus polluting the breath.

SULPHONAL

Sulphonal.

A derivative of methane.

Dose 5–20 gr., 0 3–1·2 G

ACTION

Sulphonal is a hypnotic it does not depress the heart It is almost insoluble in water and is therefore absorbed slowly It is excreted unchanged, but ex cretion is very slow and the drug is liable to have a cumulative effect. Symptoms of sulphonal pou ning are muscle cramps polyneuritis and skin rashes. Hæmatoporphyrin may appear in the urine fatty

degeneration of the liver may also occur This drug does not often cause habit formation

Methylsulphonal (Trional)

Dose 5-20 gr 0 3-1 2 G

ACTION

Almost the same as sulphonal. Like it, it is almost insoluble in water It is broken down in the body more easily than sulphonal, and is less liable to have a cumulative effect.

THE BARBITURATES

This series of drugs consist of derivatives of barbituric acid and their salts Many hundreds are known but only twenty to thirty are employed in therapeutics, as hypnotics and narcotics etc

The drugs vary considerably amongst themselves in the duration of their actions the difference depending on the rate of destruction in the body They are rendered inactive by the destruction of their side chains which liberates the inert barbituric acid Barbitone is not broken down at all in the body and is removed by excretion Phenobarbitone is broken down very slowly On the other hand amytal nembutal and evipan are rapidly destroyed and have a relatively transient action This makes them very suitable as basal anæsthetics

Many of the barbiturates especially phenobarbitone and nirvanol in full therapeutic doses give rise to rashes rather like measles associated with fever Poisonous doses cause death by paralysis of the respiratory centre Where prolonged coma occurs, œdema of the lungs and consequent broncho-pneumonia may follow Idiosyncrasy is common and poisonous effects may be produced by relatively small doses Habit formation may follow prolonged use.

Barbitonum (Veronal Diethyl barbituric Acid Malonurea)

Barbitonum Solubile (Medinal)

The monosodium salt of barbitone. It is freely soluble in water and therefore acts more quickly

Dose 5–10 gr 0 3–0·6 G

ACTION

Barbitone is not broken down in the body but is excreted unchanged in the urine. Its rate of excretion is slow and it may therefore be cumulative. Barbitone is practically insoluble in water but the sodium salt is freely soluble

Barbitone is a hypnotic with a slow and prolonged action Taken regularly over a long period, it may produce mental and moral changes with suicidal tendencies It sometimes gives rise to habit formation.

Phenobarbitonum (Phenyl-ethyl Barbituric Acid, or Luminal)

Dose ½–2 gr 0·03–0·12 G

Phenobarbitonum Solubile (Sodium Luminal)

The sodium salt of phenyl barbitone.

Dose ½–2 gr 0·03–0 12 G

ACTION

Phenobarbitone is insoluble in water whereas its sodium salt is soluble It is a hypnotic and sedative *with a prolonged action* *It is also used in* the treatment of epilepsy owing to its action in depressing the motor cortex. The toxic effects are similar to those of barbitone Hæmatoporphyrinuria sometimes occurs.

Phemitonum (Prominal)

Dose ½–6 gr 0·03–0·4 G

ACTION

Phemitonum is a hypnotic and an anti-epileptic the latter by virtue of its depressant action on the cerebral cortex

Hexobarbitonum (Hexobarbital Evipan)

Dose 4–8 gr 0·25–0·5 G

Hexobarbitonum Solubile

Dose By intravenous or intramuscular injection 3–15 gr 0 –1 G By rectal injection 30–60 gr –4 G

ACTION

Hexobarbitone is hypnotic with a very rapid action of short duration Soluble hexobarbitone is employed as an anaesthetic for operations of short duration or as a preliminary to an inhalation anaesthetic. Its action is very short and consciousness returns within ten to twenty minutes

Muscular twitchings are of frequent occurrence but may be largely prevented by pre-medication with morphine and scopolamine It should not be used in patients with impaired liver function or where there is likely to be any respiratory obstruction

Carbromalum (Uradal)

Dose 5–15 gr 0·3–1 G

ACTION

Carbromal is a hypnotic. It does not produce after-effects

Many of the barbiturates are not official preparations Mention is made of the following drugs as they are in common use

Pentothal.

Dose 4–8 gr 0·25–0·5 G

Pentothal Sodium.

Dose 1½–2½ gr 0·1–0·15 G as a 5% solution for intravenous injection

ACTION

Pentothal in small doses is sedative in medium doses hypnotic, and in large doses anæsthetic It is used as a basal anæsthetic and for inducing amnesia and anæsthesia in childbirth. The sodium salt is much more soluble it is effective in smaller doses and its action is of briefer duration. It is employed intravenously as a short general anæsthetic.

Pentobarbital Sodium (Nembutal)

Dose As a hypnotic, 1½ gr 0·1 G as a basal anæsthetic 1½–3 gr 0·1–0· G half an hour before operation

ACTION

Nembutal is similar in action to barbitone but it is effective in smaller doses. It is mainly used as a basal anæsthetic before inhalation anæsthesia. It is broken down rapidly and is therefore very suitable for this purpose

Amytal.

Dose As a sedative ¼–⅝ gr 0·02–0·04 G As a hypnotic, 1½–5 gr 0·1–0·3 G As an anæsthetic 3–10 gr 0·–0·6 G

ACTION

Amytal is a sedative and hypnotic and as a preliminary to surgical anæsthesia It is also used in the treatment of certain types of convulsions—*e.g* *tetanus*.

Sodium Amytal.

Dose As a sedative or hypnotic in capsules containing 3 gr 0·2 G As an anti-spasmodic in tetanus, 6–12 gr 0·4–0·8 G

ACTION

It is used as a basal anæsthetic and as a hypnotic. It is also employed to combat the *convulsions of* tetanus.

Sodii Phenylhydantoinas (Epanutin)

Dose $1\frac{1}{2}$ gr 0·1 G two to four times daily

ACTION

It is used as an anti-convulsant in epilepsy and appears to be more effective in controlling grand mal than petit mal Unfortunately toxic reactions are frequent with therapeutic doses and include vertigo tremor ataxia diplopia fever dermatitis.

UREA

Urea.

Is the diamide of carbonic acid

Dose 15–240 gr., 1–16 G

ACTION

Urea is a normal constituent of the urine being practically a non threshold substance It is formed in the liver from ammonium salts which is a product of the deamination of proteins

Urea is a diuretic, its excretion being accompanied by an increase in the volume of urine

Urethanum

Dose 15–30 gr 1–2 G

ACTION

Urethane is a mild hypnotic with very low toxicity and a marked diuretic effect Is without after effects and has no depressant action on the heart In 1–2 G doses it is stated to give relief in bronchial asthma

PREPARATION

INJECTIO QUININÆ ET URETHANI Contains 12 5% of quinine and 6·25% of urethane

Dose By intravenous injection as a sclerosing agent –8–75 min 0·5–5 mils

Quinine and urethane is employed in the injection treatment of varicose veins.

Suraminum.

Dose By intravenous injection, 15–45 gr., 1–3 G

ACTION

Suramin is a complex organic urea. It is employed in the treatment of trypanosomiasis and is most effective in the early stages. A total dose of 5 G is given. Signs of renal irritation and sometimes a toxic dermatitis may appear but clear up on cessation of treatment

VASO-DILATORS

AMYL NITRITE

Amylis Nitris

Dose 2–5 min., 0·12–0·3 mil, by inhalation from a crushed glass capsule.

ACTION

Amyl nitrite produces a relaxation of plain muscle generally but especially of that of the arterioles. Vaso-dilatation occurs, followed by a rapid and profound fall in the blood pressure The skin vessels especially those of the head and neck, dilate causing a deep blush. There is headache, giddiness and a throbbing sensation There is a rapid increase in the pulse-rate

Amyl nitrite acts very rapidly and its effects are transient. Large doses cause the conversion of much of the hæmoglobin of the blood into methæmoglobin

SODIUM NITRITE

Sodii Nitris

Dose ½–2 gr., 0·03–0·12 G

ACTION

Sodium nitrite has the same action as amyl nitrite It is taken by the mouth, and takes longer to reach its

maximum effect which however lasts for about two hours.

Large doses form methæmoglobin

NITROGLYCERIN

Liquor Glycerylis Trinitratis (Liquor Trinitrini)

A 1% solution of nitroglycerin.

Dose ½–2 min. 0·03–0·12 mil

Tabella Glycerylis Trinitratis (Tabella Trinitrini)

Each contains $\frac{1}{130}$ gr (0 5 mg) of nitroglycerin.

Dose 1–2 tablets

ACTION

Nitroglycerin is reduced to a nitrite after absorption It has a similar action to the nitrites It takes longer to act than sodium nitrite and its action is more prolonged It does not form methæmoglobin when given in large doses

ERYTHROL TETRANITRATE

Erythritylis Tetranitras Dilutus

Contains 50% of erythrol tetranitrate (erythrityl tetranitrate) and 50% of lactose

Dose ½–2 gr 0·03–0·12 G

ACTION

Similar to the above drugs. It is less powerful, but has a slower and more prolonged action.

SPIRIT OF NITROUS ÆTHER

Spiritus Ætheris Nitrosi (Sweet Spirit of Nitre)

An alcoholic solution containing ethyl nitrite acetic ether paraldehyde aldehyde and acetic acid. Must contain between 1 25% and 2 5% of ethyl nitrite.

Dose 15–60 min 1–4 mils.

Liquor Æthylis Nitritis Concentratus.

Dose 2–8 min 0·125–0·5 mil

This preparation has approximately eight times the strength in content of ethyl nitrite of spirit of nitrous ether

ACTION

It is a diffusible stimulant, stomachic, and carminative in virtue of the ether The nitrite causes vasodilatation but owing to its dilution, the action is feeble. The drug also has a diaphoretic action.



ANTIPYRETICS AND ANALGESICS

Phenacetinum

Dose 5–10 gr., 0·3–0·6 G

Phenazonum (Antipyrin)

Dose 5–10 gr 0·3–0·6 G

Amidopyrina (Pyramidon)

Is an amido derivative of antipyrin.

Dose 5–10 gr., 0·3–0·6 G

ACTION

All the above drugs are antipyretics They have a depressant action on the heart and are little used in febrile conditions now Phenacetin sometimes causes collapse and severe prostration and amidopyrin has occasionally produced agranulocytosis.

These drugs are also analgesics amidopyrin having the strongest action. Their mode of action is not known They quickly relieve headache

THE SULPHONAMIDES

Sulphanilamidum (Prontosil Album)

Dose 8–15 gr 0·5–1 G

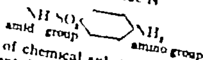
This is the only official sulphonamide Others in common use are as follows their doses are the same as for sulphanilamide

Sulphapyridina (M and B 693 Dagenan)
Sulphapyridina Solubilis.
For intramuscular injection
Sulphathiazolum (Sulphathiazole)
Sulphadiazine
Sulphaguanidine

ACTION

The basic member of the sulphonamide group of drugs is p amino benzene sulphonamide now known as sulphanilamide. The sulphonamide first used was a much more complex substance, Prontosil Rubrum; its activity is however due to the fact that it is broken down in the body into sulphanilamide which is a much simpler substance.

The formula of sulphanilamide is



Two types of chemical substance may be derived from this parent drug

(a) By substitution of the amino group—e g Prontosil Rubrum Rubiazol Soluseptasine

(b) By substitution of the amide group. This gives Sulphathiazole Sulphapyridine Sulphadiazine and Sulphaguanidine

The sulphonamide drugs are generally of low solubility and are slowly absorbed. Sulphathiazole is the most rapidly absorbed of the group and sulphaguanidine is absorbed in small amounts only. Their rate of absorption is increased by alkalinity and therefore sodium bicarbonate is often given with them. They are excreted rapidly in the urine; they are partly excreted unchanged and partly acetylated, a conversion which takes place in the liver.

Mode of Action.—This is not known for certain though much research is being carried out to determine it. The sulphonamides are not bactericides nor do they neutralise toxins. They probably act by interfering with the metabolism of bacteria possibly by some action on the bacterial enzymes.

Range of Action.—The sulphonamides are effective against a wide range of organisms. Sulphanilamide was first used in hæmolytic streptococcal infections and produced a remarkable reduction in the mortality from puerperal fever. It is also effective in erysipelas, acute tonsillitis, etc. The *B. coli communis* is also susceptible to sulphanilamide and it has largely replaced other urinary antiseptics in the treatment of pyelitis due to this organism. It acts in an alkaline urine so it is also effective in *B. proteus* pyelitis. Sulphanilamide has a powerful curative effect in gonorrhœa.

Sulphapyridine has very much the same effects as sulphanilamide, but it has in addition a very powerful effect on the pneumococcus and the meningococcus, and it has strikingly reduced the mortality rates in pneumonia and meningococcal meningitis.

Sulphathiazole and sulphadiazine have almost as powerful actions on the organisms mentioned above as sulphanilamide and sulphapyridine, but they have the advantage in being very much less toxic. Sulphaguanidine, being absorbed in small amounts, only acts as an intestinal antiseptic and has been successful in the treatment of bacillary dysentery, though it has not had any success in typhoid fever.

The staphylococcus has proved relatively resistant to the action of the sulphonamides, which on the whole have had very little effect in staphylococcal infections.

Recently great success has been obtained in treating septic wounds by means of local application of a powder of one of the sulphonamides, and there seems to be a big future for these drugs in traumatic and war surgery.

Dosage.—To obtain the full effects of these drugs it is essential to secure an adequate concentration in the blood (10 mg. per 100 c.c.). This is obtained by administering large amounts at frequent intervals during the first few days, the usual dosage being 6–8 grammes in the twenty-four hours. If insufficient doses are given, the organism may become sulphonamide resistant.

Toxic Effects.—Mild toxic effects are common—e.g. nausea, vomiting, headache, malaise and general depression—though these are less frequent with the newer drugs. Cyanosis is frequent and is caused by the formation in the blood of either sulphaemoglobin or methaemoglobin. It is not harmful and does not markedly reduce the oxygen-carrying power of the blood.

Rashes of various kinds are a common complication. They are usually morbilliform or scarlatiniform but they may simulate other infectious fevers. They sometimes appear after relatively small doses and appear to be due to idiosyncrasy. Irritation of the renal tubules may be caused by the deposition of crystals, giving rise to hæmaturia; occasionally complete blockage of the ureters occurs. The hæmaturia ceases soon after administration of the drug is stopped. This deposition of crystals can be prevented by keeping the urine alkaline and administering large amounts of fluid.

The most serious toxic effect of the sulphonamides is damage to the red bone marrow causing neutropenia, which usually disappears when the drug is stopped, but occasionally agranulocytosis occurs.

VEGETABLE SUBSTANCES WHOSE ACTIVE PRINCIPLES ARE ALKALOIDS OR GLUCOSIDES

OPIUM

Opium.

The inspissated juice obtained by incision of the unripe capsules of *Papaver somniferum*.

Composition. Contains numerous alkaloids, the most important being Morphine (10%), Codeine (0·5%), Narcotine (6%), Thebaine (0·3%) and Papaverine (1%).

N.B.—When Opium is prescribed Opium Pulveratum should be dispensed.

Opium Pulveratum (Pulvis Opii)

Powdered opium Contains 10 of anhydrous morphine

Dose ½–3 gr 0·03–0·2 G

In 3 gr (0·2 G) of powdered opium there is $\frac{1}{3}$ gr (0·02 G) of morphine.

PREPARATIONS

1 Extractum Opii Siccum

Dose ¼–1 gr 0·016–0·06 G *Strength* 20% morphine

2 Tinctura Opii (Laudanum)

Dose 5–30 min. 0·3–2 mils *Strength* 1% morphine

3 Tinctura Opii Camphorata (Paregoric)

Dose 30–60 min 2–4 mils. *Strength* 5% of tincture of opium Contains 0·05% of morphine

4 Tinctura Opii Camphorata Concentrata

Dose 4–8 min 0·25–0·5 mil. *Strength* 40% of tincture of opium Contains 0·4% of morphine

5 Pulvis Ipecacuanhæ et Opii (Dover's Powder)
Contains ipecacuanha 10% opium 10% lactose 80%

Dose 5–10 gr 0·3–0·6 G

6 Pulvis Cretæ Aromaticus cum Opio.

Dose 10–60 gr 0·6–4 G *Strength* 2·5% opium.

7 Suppositorium Plumbi cum Opio

Contains 3 gr (0·2 G) lead acetate 1 gr (0·06 G) opium.

ACTION

The action of opium is largely due to its morphine (see below) Its action is less rapid owing to its slower absorption, and it is more liable to upset digestion and cause constipation

Morphinæ Hydrochloridum

Dose ⅛–¼ gr 0·008–0·02 G

PREPARATIONS

1 LIQUOR MORPHINÆ HYDROCHLORIDI

Dose 5–30 min. 0 3–2 mils. *Strength* 1% morphine hydrochloride 30 mins (2 mils) of the liquor contain ¼ gr (0 02 G) of morphine hydrochloride

SUPPOSITORIUM MORPHINÆ Contains ¼ gr (0·015 G) morphine hydrochloride.

3 TROCHISCUS MORPHINÆ ET IPECACUANHÆ Contains 1/36 gr (0·002 G) morphine hydrochloride, 1/12 gr (0·006 G) ipecacuanha

Morphinæ Tartras

Dose ⅛–¼ gr 0·008–0·02 G

Morphinæ Sulphas.

Dose ⅛–¼ gr 0·008–0·02 G

ACTION

Morphine is partly broken down in the body about one third being excreted unchanged in the fæces When large doses are given a small amount is excreted in the urine When tolerance is established and large doses given the drug is excreted in the urine

Opium and morphine stimulate the higher centres of the brain later these are depressed and sleep occurs Morphine has a strong analgesic action It has a selective action on the medullary centres depressing the respiratory and cough centres but stimulating the vagal centres especially the vomiting centre Stimulation of the vagal centre results in slowing of the pulse Contraction of the pupil occurs owing to stimulation of the oculo-motor centre All

the secretions of the body except that of the sweat glands are diminished contraction of the pyloric and ileo-colic sphincters occurs resulting in constipation. All the stimulant actions of morphine are antagonised by atropine

Poisonous doses of morphine cause death from respiratory failure. Tolerance to the drug however, is rapidly established the brain becoming more resistant to its action and the body acquiring an increased power of breaking down the drug

Codeina.

One of the alkaloids of opium.

Dose ¼–1 gr., 0·016–0·06 G

PREPARATION

CODEINÆ PHOSPHAS.

Dose ¼–1 gr., 0·016–0·06 G

ACTION

Similar to that of morphine, but to a much less degree. Is a poor analgesic but depresses the cough centre to a much greater extent. It hardly ever produces addiction.

Papaveratum (Opium Concentratum)

The total or principal alkaloids of opium as hydrochlorides, adjusted to contain 50% of morphine

Dose ⅙–⅓ gr., 0·01–0·02 G By subcutaneous injection $\frac{1}{12}$–⅙ gr 0·005–0·01 G

Omnopon is a preparation of Papaveratum available as powder oral tablets hypodermic tablets and ampoules

ACTION

Papaveratum is not an official preparation but it is in common use

It is less toxic than morphine and is better t[illegible] it has a less depressant [illegible] the re[illegible] centre, is less constipatin[illegible] of[illegible]

vomiting. It may be used in all cases in which opium or morphine is prescribed.

Diamorphinæ Hydrochloridum (Heroin)

A synthetic derivative of morphine.

Dose $\frac{1}{24}$–$\frac{1}{6}$ gr., 0·0025–0·009 G.

ACTION

Similar to that of morphine. It depresses the cough centre, but acts more strongly on the respiratory centre. It produces drug addiction more readily than morphine.

Apomorphinæ Hydrochloridum

A synthetic derivative of morphine.

Dose As an expectorant $\frac{1}{40}$–$\frac{1}{20}$ gr., 0·001–0·002 G. As an hypnotic and emetic. By subcutaneous injection $\frac{1}{30}$–$\frac{1}{8}$ gr. 0·002–0·008 G.

ACTION

Apomorphine is an emetic by virtue of its direct action on the vomiting centre. When given in small doses by the mouth, it acts as an expectorant. Therapeutic doses of the drug produce an hypnotic action. Toxic doses cause general cerebral excitation and convulsions.

BELLADONNA

Belladonnæ Folium

The dried leaves of *Atropa belladonna* (Deadly Nightshade).

Composition The alkaloids Atropine and Hyoscyamine (total 0·3%).

When belladonna folium is prescribed, belladonna pulverata should be dispensed.

Belladonna Pulverata.

Powdered belladonna leaf. Contains 0·3% of alkaloids.

Dose ½–3 gr. 0·03–0·2 G.

Belladonnæ Radix

The dried root of *Atropa belladonna*

Composition Atropine and Hyoscyamine (total 0·4%)

Dose ½–2 gr 0·03–0·12 G

PREPARATIONS

1 Extractum Belladonnæ Liquidum Contains 0·75% of the alkaloids of belladonna.

Dose ¼–1 min 0·015–0·06 mil

2 Extractum Belladonnæ Siccum Contains 1% of the alkaloids of belladonna.

Dose ¼–1 gr. 0·015–0·06 G

3 Tinctura Belladonnæ

Dose 5–30 min., 0·3–2 mils. *Strength* 0·03% of total alkaloids.

4 Emplastrum Belladonnæ

Strength 0·25% of alkaloids.

5 Linimentum Belladonnæ

Strength 0·375% of alkaloids

6 Suppositorium Belladonnæ Contains $\frac{1}{64}$ gr., 0·001 G alkaloids.

N.B —The liquid extract is prepared from the root and the dry extract from the leaves.

Atropina.

An alkaloid obtained from *Atropa belladonna* and other plants of the same order It is a mixture in equal proportions of lævohyoscyamine and dextro-hyoscyamine and is itself optically inactive

Dose $\frac{1}{100}$–$\frac{1}{60}$ gr 0·00025–0·001 G

Atropinæ Sulphas

Dose as for Atropina.

PREPARATIONS

1 LAMELLA ATROPINÆ Contains 0·013 mg., $\frac{1}{5000}$ gr of atropine sulphate

OCULENTUM ATROPINÆ
Strength 0·5% atropine sulphate

3 OCULENTUM ATROPINÆ CUM HYDRARGYRI OXIDO
Strength 0·125% atropine sulphate yellow mercuric oxide 1%.

ACTION

Belladonna and atropine stimulate the lower motor centres of the brain large doses may cause delirium Later epileptiform convulsions may occur followed by paralysis of the medullary centres with resulting coma

Atropine depresses the parasympathetic nerve endings with consequent paralysis of the vagus resulting in acceleration of the pulse and arrest of peristalsis. Relaxation of involuntary muscle—e g of the bladder and bronchi—also occurs Atropine also depresses the secretory nerves of the salivary glands the glands of the stomach pancreas and intestine respiratory tract and also of the sweat glands resulting in a great reduction in secretion The mammary secretion is not affected

Atropine causes paralysis of accommodation and dilatation of the pupil by its action on the terminations of the third nerve

Atropinæ Methylnitras (Eumydrin)
Dose $\frac{1}{60}$–$\frac{1}{30}$ gr 0·001–0·002 G

ACTION

This drug is not official It is a powerful mydriatic and is much less toxic than atropine It is also used in the treatment of congenital pyloric stenosis when it acts as an anti-spasmodic

Homatropinæ Hydrobromidum.

Dose 1/65–1/32 gr., 0·001–0·002 G

PREPARATION

LAMELLA HOMATROPINÆ. Contains 1/100 gr 0·65 mg of the hydrobromide.

Its action is identical to that of atropine, but the effect on the pupil passes off more rapidly

STRAMONIUM

Stramonium.

The dried leaves of *Datura stramonium.*

Composition Hyoscyamine and a small proportion of Atropine.

Dose 1/5–3 gr 0·03–0·2 G

PREPARATIONS

1 EXTRACTUM STRAMONII SICCUM Contains 1% of the alkaloids of stramonium calculated as hyoscyamine.

Dose 1/4–1 gr 0·015–0·06 G In post-encephalitic and similar conditions 1–8 gr 0·06–0·5 G

2 EXTRACTUM STRAMONII LIQUIDUM Contains 0·25% of the alkaloids of stramonium calculated as hyoscyamine.

Dose 1½–3 min., 0·1–0·2 mil.

3 TINCTURA STRAMONII Contains 1% of the liquid extract of stramonium.

Dose 5–30 min. 0·3–2 mils

ACTION

Almost identical with that of atropine. It has a greater effect in relaxing the bronchial muscle.

HYOSCYAMUS

Hyoscyamus

From the dried leaves of *Hyoscyamus niger*

Composition The alkaloids Hyoscyamine and Hyoscine (scopolamine) Contains 0·05% total alkaloids

Dose 3–6 gr 0·2–0·4 G

PREPARATIONS

1 Tinctura Hyoscyami Contains 0·005% alkaloids

Dose 30–60 min. 2–4 mils.

2 Extractum Hyoscyami Siccum Contains 0·3% alkaloids.

Dose ¼–1 gr 0·016–0·06 G

3 Extractum Hyoscyami Liquidum Contains 0·05% alkaloids.

Dose 3–6 min., 0·2–0·4 mil.

4 Pilula Colocynthidis et Hyoscyami. Contains colocynth aloes, dry extract of hyoscyamus and scammony resin

Dose 4–8 gr., 0·25–0·5 G

ACTION

Very similar to that of belladonna and stramonium Differences are due to the presence of small amounts of hyoscine (see below)

Hyoscinæ Hydrobromidum

Dose 1/200–1/100 gr 0·3–0·6 mg

PREPARATION

Oculentum Hyoscinæ Contains 0·125% of hyoscine hydrobromide

ACTION

Hyoscine in small doses depresses the cerebral motor cortex but does not reduce sensation. It is of great value in allaying motor excitement. Large doses have a strong depressant action on the respiratory centre and may give rise to delirium followed by coma. In combination with morphia or omnopon hyoscine is employed in childbirth to produce analgesia and amnesia (twilight sleep)

Hyoscine hydrobromide is employed as a mydriatic.

COCAINE

Cocaina.

An alkaloid obtained from *Coca* leaves

Dose $\frac{1}{8}$–$\frac{1}{4}$ gr 0·008–0·016 G

Cocainæ Hydrochloridum.

Dose $\frac{1}{8}$–$\frac{1}{4}$ gr 0·008–0·016 G

PREPARATIONS

1 LAMELLA COCAINÆ. Contains 1 3 mg., $\frac{1}{50}$ gr of the hydrochloride.

2. TROCHISCUS KRAMERIÆ ET COCAINÆ. Contains $\frac{1}{20}$ gr., 3 mg of the hydrochloride and 1 gr (0·006 G) of extract of krameria.

3 OCULENTUM COCAINÆ.

Strength 0·25% of the hydrochloride.

ACTION

Cocaine is a powerful stimulant of the cerebral higher centres It causes motor excitation increased wakefulness and a greater ability to endure hunger and fatigue Reactions are quicker but less accurate. Large doses produce clonic convulsions due to stimulation of the motor cortex. This is followed by depression of the medullary centres, and finally respiratory paralysis.

It paralyses sensory nerve endings causing local anæsthesia also nerve trunks both sensory and motor There is no initial stage of stimulation When applied locally to the eye the pupil is dilated and the conjunctiva is anæsthetised The mydriatic action is probably due to sensitisation of the tissues to adrenalin and not to any direct action on the sympathetic

The heart is accelerated later there is cardiac depression.

Cocaine is a powerful habit producing drug

Amylocainæ Hydrochloridum (Stovaine)

A synthetic derivative of cocaine

Dose By mouth and subcutaneous injection ½-1 gr., 0·03-0·05 G By intrathecal injection ½-1½ gr., 0·03-0·1 G

Procainæ Hydrochloridum (Novocaine)

A synthetic derivative of cocaine

Dose ½-2 gr 0·03-0 12 G By subcutaneous injection up to 15 gr (1 G) By intrathecal in jection up to 2½ gr (0 15 G)

PREPARATIONS

Injectio Procainæ et Adrenalinæ Mitis Weak injection of procaine and adrenaline is prepared immediately before use by mixing a sterile solution of procaine hydrochloride (2% w/v) with three times its volume of physiological solution of sodium chloride and adding the specified proportion of adrenaline hydrochloride

Dose Up to 10½ fluid ounces up to 300 mils

Injectio Procainæ et Adrenalinæ Fortis. Contains 2% each of procaine hydrochloride and of solution of adrenaline hydrocloride

ACTION

Similar to that of cocaine They are less toxic than cocaine They are used as local anæsthetics.

Benzocaina (Ethyl Aminobenzoate)

Dose 5–10 gr 0·3–0·6 G

Orthocaina (*Orthoform*)

Dose 1½–3 gr 0·1–0·2 G

ACTION

Benzocaine and orthocaine are local anæsthetics. They are chiefly used for anæsthetising mucous membranes

PILOCARPINE

Pilocarpinæ Nitras.

The nitrate of an alkaloid obtained from jaborandi leaves (*Pilocarpus microphyllus*)

Dose $\frac{1}{10}$–$\frac{1}{4}$ gr 0·003–0·012 G

ACTION

On the whole pilocarpine has a directly opposite action to that of atropine. It increases the salivary secretion, and the secretions of the stomach, intestines pancreas, lachrymal glands, sweat glands, and the glands of the bronchial mucous membrane.

It slows the heart rate and diminishes the force of contraction. It is therefore a cardiac depressant.

Pilocarpine produces contraction of involuntary muscle—for instance that of the intestine, stomach, uterus, spleen bladder bloodvessels, and bronchioles. Contraction of the pupil occurs. The site of action of pilocarpine is the myoneural junctions of the parasympathetic, which it stimulates. Its action is antagonised by atropine which depresses the myoneural junctions

PHYSOSTIGMINE

Physostigminæ Salicylas (Eserinæ Salicylas)

The salicylate of an alkaloid obtained from Calabar bean, *the seeds of Physostigma venenosum*

Dose $\frac{1}{100}$–$\frac{1}{50}$ gr., 0·6–1·2 mg

PREPARATIONS

1 Lamellæ Physostigminæ Contains 0·065 G., $\frac{1}{1000}$ gr of the salicylate

2 Oculentum Physostigminæ Contains 0·125% of the salicylate

Prostigmin.

A synthetic drug allied to physostigmine It is not official It is more stable and safer than physostigmine

ACTION

The action of physostigmine is similar to that of pilocarpine It stimulates the involuntary muscle of the bloodvessel intestines stomach bronchial tubes spleen uterus bladder and iris The action is on the myoneural junction There is thus contraction of the pupil The saliva and other secretions are increased In all the above it is antagonised by atropine

The heart is slowed and the blood pressure falls The respiratory centre is first stimulated and then depressed Large doses cause respiratory failure Lastly physostigmine depresses the spinal cord inhibiting reflex activity Physostigmine and prostigmine produce a remarkable temporary improvement in myasthenia gravis.

CARBACHOL

Carbacholum (Moryl Chloryl)

Dose $\frac{1}{64}$–$\frac{1}{16}$ gr 0·001–0·004 G By subcutaneous injection $\frac{1}{240}$–$\frac{1}{120}$ gr 0·00025–0·0005 G

ACTION

Carbachol has similar actions to acetylcholine but it has a slower action and is effective when given orally It stimulates the parasympathetic nervous system lowers the blood pressure and dilates the peripheral bloodvessels. It causes contraction of the

muscles of the intestinal and bladder walls, and is employed in relieving post-operative atony of the intestine

NUX VOMICA

Nux Vomica

The dried ripe seeds of *Strychnos nux-vomica.*

Composition The active principles are the alkaloids Strychnine and Brucine which is allied to Strychnine. There should be not less than 1·2% of Strychnine.

Nux Vomica Pulverata.

Dose 1–4 gr., 0·06–0·25 G *Strength* 1·2% strychnine. There is 1/20 gr (0·003 G) of strychnine in 4 gr (0·25 G) of powdered nux vomica.

PREPARATIONS

1 EXTRACTUM NUCIS VOMICÆ SICCUM.

Dose ¼–1 gr., 0·015–0·06 G *Strength* 5% strychnine—*i.e.*, 1/20 gr (0·003 G) in 1 gr (0·06 G)

2 EXTRACTUM NUCIS VOMICÆ LIQUIDUM

Dose 1–3 min. 0·06–0·2 mil. *Strength* 1·5% strychnine—*i.e* 1/20 gr (0·003 G) in 3 min. (0·2 mil)

3 TINCTURA NUCIS VOMICÆ

Dose 10–30 min. 0·6–2 mils. *Strength* 0·125% strychnine—*i.e.*, 1/25 gr (0·0025 G) in 30 min. (2 mils)

Strychninæ Hydrochloridum.

Dose 1/32–1/8 gr 2–8 mg

PREPARATIONS

1 LIQUOR STRYCHNINÆ HYDROCHLORIDI Contains 1·0% of the hydrochloride—*i.e* ⅛ gr (0·008 G) in 12 min (0·8 mil)

Dose 3–12 min., 0·2–0·8 mil

2. SYRUPUS FERRI PHOSPHATIS CUM QUININA ET STRYCHNINA (Easton's Syrup) Contains 0·0246%

strychnine 1·8% anhydrous ferrous sulphate 1·09% anhydrous quinine In 60 min (4 mils) there is 1/50 gr (0·0012 G) of strychnine

Dose 30–60 min., 2–4 mils.

ACTION

In small doses strychnine produces exaggerated reflex responses in larger doses tonic convulsions The action is on the spinal cord These convulsions occur in response to sensory stimuli and consist of a simultaneous contraction of most of the muscles of the trunk and limbs

It has a mild stimulant action on the cerebral cortex and a well marked effect on the sensory junctions of the brain The power of discriminating sensations is increased and the sensations of touch smell and hearing are rendered more acute Strychnine has a stimulant action on the retina increasing the acuity of vision and enlarging the field of vision

Strychnine is a powerful stimulant of the medullary centres causing an increase of respiration slowing of the heart and a rise of blood pressure It has no direct action on the heart

The higher motor centres are stimulated the power to do work is slightly increased and there is a definite improvement in the performance of psychological tests. Toxic doses do not produce hallucinations or delirium consciousness is fully retained during the convulsions

Nux vomica has a very bitter taste and exerts a marked stomachic action stimulating the secretion of gastric juice

CAFFEINE

Caffeina.

An alkaloid obtained from the dried leaves of *Camellia thea* (common tea) and similar plants It is a derivative of xanthine (being trimethyl xanthine)

Dose 2–5 gr., 0·12–0·3 G

PREPARATION

Caffeina et Sodii Benzoas

Dose 5–15 gr 0 3–1 G By injection 2–5 gr., 0·12–0 3 G

ACTION

Caffeine has a marked stimulant effect on the cerebral cortex, all the higher functions being affected. All the psychic functions are improved and there is increased endurance of muscular exertion.

It has an action on the medullary centres similar to that of strychnine. The spinal cord is little affected except by toxic doses which produce convulsions.

Caffeine has also a diuretic action.

Toxic doses of caffeine produce insomnia tremor hallucinations and delirium

Theophyllina.

An alkaloid obtained from the dried leaves of *Camillia sinensis* or prepared synthetically It is dimethyl xanthine.

Theophyllina et Sodii Acetas (Theocin)

Dose . 5 gr., 0·12–0·3 G

Theobromina et Sodii Salicylas (Diuretin)

Theobromine is an isomer of Theophylline

Dose 10–20 gr., 0·6–1·2 G

ACTION

Both theophylline and theobromine are much more powerful diuretics than caffeine. They produce a direct effect on the renal epithelium. Theophylline resembles caffeine in its stimulant effect on the brain but theobromine has a slight action only on the brain. Theophylline is liable to produce vomiting Both theophylline and theobromine cause a rise of blood pressure.

LOBELIA

Lobelia

The dried flowering herb of *Lobelia inflata*

Chief constituent The alkaloid Lobeline which is the active principle

Dose 1–3 gr 0·06–0·2 G

PREPARATIONS

1 TINCTURA LOBELIÆ ÆTHEREA. Contains 20% of lobelia in spirit of ether

Dose 5–15 min 0·3–1 mil.

2 TINCTURA LOBELIÆ ÆTHEREA CONCENTRATA

Dose 1¼–4 min 0·08–0·25 mil *Strength* 80%

ACTION

Lobelia stimulates the respiratory centre the bronchial musculature is relaxed It is used in asthma

It is a strong gastro-intestinal irritant, large doses producing severe vomiting, diarrhœa, and collapse

DIGITALIS

Digitalis Folium

The dried leaves of *Digitalis purpurea* the purple foxglove

Digitalis Pulverata.

Powdered digitalis leaf

Dose ½–1½ gr 0·03–0·1 G

Composition The active principles are glucosides and are as follows

1 Digitoxin. Insoluble in water but soluble in alcohol Present in the leaves.

2 Digitalin Insoluble in water but soluble in alcohol Present in the seeds.

3 Gitoxin. Also insoluble in water Obtained from the leaves.

All three are present in the tincture which is a fairly stable preparation They are also present in part in the infusion, being kept in solution by saponins. The infusion, however is very unstable.

PREPARATIONS

1 INFUSUM DIGITALIS RECENS.

Dose 90-300 min., 6–20 mils.
Single dose 1–4 fl. oz. 30–120 mils.

The fresh infusion must be used within twelve hours of preparation.

2 TINCTURA DIGITALIS.

Dose 5–15 min. 0·3–1 mil.

Single Dose 30–90 min., 2–6 mils.

Digoxinum.

Digoxin is a crystalline glucoside obtained from the leaves of *Digitalis lanata*

Dose Oral Initial doses $\frac{1}{64}$–$\frac{1}{40}$ gr 0·001–0·0015 G Maintenance doses $\frac{1}{250}$ gr 0·00025 G twice daily By intravenous injection, $\frac{1}{120}$–$\frac{1}{60}$ gr 0·0005–0·001 G

ACTION

Digitalis produces the following effects on the heart

1 The heart rate is slowed This is due to vagal stimulation and the effect is abolished by atropine.

2 The rate of conduction in the bundle of His and Purkinje s fibres is delayed. This effect is partly due to vagal stimulation (abolished by atropine) and is partly a direct action on the conduction tissue Toxic doses may cause complete or partial heart block.

3 *Digitalis increases the force of contraction of* the auricles and ventricles. Toxic doses greatly increase ventricular excitability giving rise to extra systoles and even ventricular fibrillation.

Digitalis is of great benefit in auricular fibrillation

By slowing the rate of conduction in the bundle of His the ventricles receive fewer impulses from the auricles and thus are able to contract relatively slowly and therefore more effectively

Other Actions Digitalis is also a gastro-intestinal irritant large doses produce nausea and vomiting The latter may be due to stimulation of the vomiting centre

It exerts a diuretic action in individuals with congestive cardiac failure but this action is slight in healthy persons

Toxic doses of digitalis cause vomiting bradycardia multiple extra-systoles and heart block

Digitalis is excreted very slowly and is very liable to produce a cumulative effect

STROPHANTHUS

Strophanthus

The dried ripe seeds of *Strophanthus kombé*

Composition Strophanthin the active principle a glucoside This is an amorphous substance also known as kombé strophanthin It is soluble in water

PREPARATION

Tinctura Strophanthi

Dose -5 min 0 12-0 3 mil

Strophanthinum (Kombé Strophanthin)

A mixture of glucosides obtained from *Strophanthus kombé*

Dose By intramuscular and intravenous injection $\frac{1}{250}$-$\frac{1}{60}$ gr 0·00025-0·001 G

N.B —There is another glucoside with a similar action known as strophanthin gratus or ouabain, obtained from the plant *Strophanthus gratus* Ouabain is a crystalline substance and is very active. It is not official. The dose is $\frac{1}{120}$ gr., 0·0005 G

ACTION

Strophanthus has the same action on the heart as digitalis. It acts, however more rapidly and is broken down by the body more quickly

SQUILL

Scilla.

The dried bulb of *Urginea scilla*

Composition The glucosides Scillitoxin and Scillipicrin, the active principles

Dose 1–3 gr 0·06–0·2 G

PREPARATIONS

1 OXYMEL SCILLÆ

Dose 30–60 min., 2–4 mils. *Strength* 5%.

2 ACETUM SCILLÆ

Dose 10–30 min., 0·6–2 mils. *Strength* 10%.

3 TINCTURA SCILLÆ

Dose 5–30 min. 0 3–2 mils. *Strength* 10%.

4 SYRUPUS SCILLÆ. Contains 45% of acetum scillæ.

Dose 30–60 min., 2–4 mils

5 EXTRACTUM SCILLÆ LIQUIDUM

Dose ½–3 min 0·03–0·2 mil

Liquid extract of squill has approximately ten times the strength of tincture of squill.

Urginea (Indian Squill)

Indian squill is the dried bulb of *Urginea indica*

Dose 1–3 gr., 0·06–0·2 G

ACTION

This closely resembles that of digitalis, but it is a more powerful diuretic It has an expectorant action by increasing the secretion of the bronchial mucous

glands reflexly by irritating the nerve endings of the vagus in the stomach

ACONITE

Aconitum

The dried root of *Aconitum napellus* (Monkshood) Contains not less than 0·4% of alkaloids

Composition The alkaloids Aconitine (which is the active principle) Aconine and Benzaconine

PREPARATION

Linimentum Aconiti Contains 0·2% of alkaloids

ACTION

Aconitine first stimulates and then paralyses the sensory nerve endings in the skin and mucous membranes there is a feeling of tingling and warmth followed by numbness and local anæsthesia. The motor nerve endings are also believed to be affected but to a much less degree Neither reddening of the skin nor vesication occurs.

The medulla is first stimulated and then depressed the heart and respiration being affected accordingly

The heart rate is slowed later it accelerates and may become irregular There is great variation of blood pressure The above is a vagus effect later the drug acts directly on the heart and finally causes ventricular fibrillation.

Aconite is an antipyretic and a mild diaphoretic.

ERGOT

Ergota.

The sclerotium of a fungus *Claviceps purpurea* originating in the ovary of *Secale cereale* (the common rye) Contains not less than 0·2 % of total alkaloids.

Composition (1) Ergometrine This alkaloid was first isolated in 1935 It is soluble in water and hence is present in the watery extract (2) An alkaloid

Ergotoxine, which is insoluble in water but soluble in alcohol (3) An alkaloid Ergotamine. This is also insoluble in water but soluble in alcohol. Ergotoxine and Ergotamine have similar pharmacological actions. They are not present in the watery extracts.

The therapeutic actions of Ergot are due to these alkaloids. Ergot also contains *Histamine* and Tyramine.

When Ergota or Pulvis Ergotæ is prescribed Ergota Præparata should be dispensed

Ergota Præparata.

Contains 0·2% of total alkaloids.

Dose 5–15 gr 0 3–1 G

PREPARATIONS

1 Extractum Ergotæ Liquidum. Contains 0·06% alkaloids when fresh.

Dose 10–20 min. 0·6–1·2 mil.

Ergotoxinæ Æthanosulphas.

Dose $\frac{1}{130}$–$\frac{1}{65}$ gr 0 5–1 mg., by subcutaneous or intramuscular injection.

Ergometrina.

Dose $\frac{1}{130}$–$\frac{1}{65}$ gr 0·0005–0·001 G By intramuscular injection $\frac{1}{260}$–$\frac{1}{130}$ gr 0·00025–0·0005 G By intravenous injection $\frac{1}{500}$–$\frac{1}{260}$ gr., 0·000125–0·00025 G

ACTION

Ergotoxine causes contraction of plain muscle Thus the blood pressure is raised peristalsis of the intestine is increased, etc.

Ergotoxine causes increased contractions of the pregnant or parturient uterus. An important action of the drug is that it inhibits the motor action of adrenalin, in effect paralysing the motor sympathetic.

Ergotamine has very similar actions to Ergotoxine

They act on the uterus when given by the mouth both have a marked cumulative effect. Long continued use of these drugs or of Ergot may cause gangrene from arteriolar spasm or spasmodic contractions of the muscles of the extremities

Ergometrine has a selective action on the parturient uterus and to a lesser degree on the pregnant uterus In the former it produces long and persistent uterine contractions It acts when given by the mouth It is of great value in post partum hæmorrhage It does not paralyse the motor sympathetic nor does it produce gangrene

HISTAMINE

Histaminæ Phosphas Acidus.

Dose By subcutaneous injection $\frac{1}{120}$–$\frac{1}{60}$ gr 0·005–0·001 G

ACTION

Histamine is destroyed in the alimentary tract. When injected it stimulates powerfully unstriped muscle—*e.g.*, of the bronchi alimentary tract, uterus, arterioles etc On the other hand it causes widespread dilatation of the capillaries and consequently a profound fall in blood pressure

It produces a great increase of gastric secretion probably by a direct effect on the glands of the stomach

COLCHICUM

Colchici Cormus.

The fresh corm of *Colchicum autumnale*

Composition Colchicine

Dose 2–5 gr., 0·12–0·3 G

Colchici Semen.

The dried ripe seeds of *Colchicum autumnale*

Composition Colchicine.

Dose 2–5 gr., 0·12–0·3 G

PREPARATIONS

1 Extractum Colchici Siccum Prepared from colchicum corm. Contains 1% of colchicine.

Dose ¼–1 gr 0·015–0·06 G

2 Extractum Colchici Liquidum Prepared from the seeds. Contains 0 3% of colchicine.

Dose 2–5 min. 0 12–0·3 mil

3 Tinctura Colchici Prepared from the seeds. Contains 0·03% of colchicine.

Dose 5–15 min. 0·3–1 mil.

ACTION

Externally it is an irritant internally it acts as a specific for acute gout It has however no prophylactic effect. In large doses severe gastro-intestinal irritation is produced with vomiting, diarrhoea and collapse.

CINCHOPHEN

Cinchophenum (Quinophan Atophan)

The formula is Phenylquinoline Carboxylic Acid

Dose 5–10 gr., 0·3–0·6 G

ACTION

Cinchophen possesses an antipyretic and analgesic action similar to that of the salicylates. It lowers the uric acid threshold of the kidney to zero The uric acid of the blood is therefore excreted in the urine. This action occurs both in normal and in gouty individuals. Cinchophen is therefore used in the prevention and treatment of acute gout. It occasionally causes acute yellow atrophy of the liver

CINCHONA

Cinchona

The dried bark of *Cinchona succirubra* and allied species.

Composition The following alkaloids

1 Quinine
2 Quinidine An isomer of Quinine
3 Cinchonine
4 Cinchonidine An isomer of Cinchonine

There are in addition numerous other alkaloids two acids and a glucoside Official cinchona should contain 6% of alkaloids of which not less than half consists of quinine and cinchonidine

Dose 5–15 gr 0·3–1 G

PREPARATIONS

1 EXTRACTUM CINCHONÆ

Dose 2–8 gr 0·12–0·5 G *Strength* 10% alkaloids—i.e. ⅛ gr (0·05 G) in 8 gr (0·5 G) of the extract

2 EXTRACTUM CINCHONÆ LIQUIDUM

Dose 5–15 min 0·3–1 mil *Strength* 5% alkaloids—i.e. ¾ gr (0·05 G) in 15 min. (1 mil) of the extract.

3 TINCTURA CINCHONÆ

Dose 30–60 min –4 mils. *Strength* 10% of extract of cinchona. Contains 1% alkaloids—i.e., ½ gr (0·04 G) in 60 min (4 mil) of the tincture

4 TINCTURA CINCHONÆ COMPOSITA

Dose 30–60 min 2–4 mils *Strength* 5% of extract of cinchona Contains 0·5% alkaloids—i.e. ¼ gr (0·02 G) in 60 min (4 mils) of the tincture

5 TINCTURA CINCHONÆ COMPOSITA CONCENTRATA.

Dose 8–15 min 0·5–1 mil *Strength* 20% of extract of cinchona. Contains 2% alkaloids.

Quininæ Sulphas

Dose 1–10 gr 0·06–0·6 G

PREPARATIONS

1 Liquor Quininæ Ammoniatus

Dose 30–60 min. 2–4 mils. *Strength* 2% quinine sulphate—*i.e.* 1⅕ gr (0·08 G) in 60 min (4 mils) of the liquor

2 Syrupus Ferri Phosphatis cum Quinina et Strychnina. For composition see Strychnine.

Dose 30–60 min 2–4 mils.

Quininæ Hydrochloridum.

Dose 1–10 gr., 0·06–0·6 G

Quininæ Dihydrochloridum.

Dose 1–10 gr 0·06–0·6 G By intravenous or intramuscular injection: 5–10 gr 0·3–0·6 G

Quininæ Tannas

Dose 1½–15 gr., 0·1–1 G

Quininæ Bisulphas.

Dose 1–10 gr 0·06–0·6 G

Quininæ et Æthylis Carbonas

Dose 1½–15 gr., 0·1–1 G

Ferri et Quininæ Citras.

Dose 5–15 gr 0·3–1 G

Totaquina.

A mixture of alkaloids from *Cinchona succirubra Cinchona robusta* and other species. It contains not less than 70% of crystallisable cinchona alkaloids, of which not less than ⅕ is quinine.

Dose 1–10 gr., 0·06–0·6 G

ACTION

Quinine is excreted almost entirely by the kidneys When given by the mouth a certain amount appears in the fæces, but this is due to deficient absorption.

40% of the quinine taken by the mouth is excreted in the urine 60% is broken down in the body by the liver The amount of quinine excreted and the rate of its excretion are the same whether it is given by mouth intramuscularly or intravenously

Quinine inhibits the action of many ferments and has a fairly powerful destructive action on body tissues—e g it will cause destruction of muscle if injected intramuscularly It has an antipyretic effect in fevers other than malaria The drug retards protein metabolism It is said to stimulate the uterus during labour

Quinine has a specific action on the malarial parasite but its mode of action is unknown It certainly has no direct lethal action on the parasite It probably acts in some indirect manner the nature of which is at present obscure

Cinchonism —Quinine has a specific action on the special sense organs and the first symptoms of over dosage is tinnitus with slight deafness There is later diminution in the field of vision and photophobia These effects are not permanent

Quinine also has a marked effect on the higher nervous centres causing mental dullness and con fusion The drug also irritates the stomach giving rise to nausea and dyspepsia Some people show an idiosyncrasy to quinine and small doses may produce an urticarial eruption

Quinidinm Sulphas

Dose 5-10 gr o- -o 6 G

A ACTION

Quinidine is a general cardiac depressant It prolongs the refractory period of cardiac muscle This latter action is probably the mode by which quinidine abolishes auricular fibrillation

MEPACHRINE

Mepachrinæ Hydrochloridum (*Atebrin Quinacrine*)

Dose ¾–1½ gr 0·05–0·1 G

Mepachrinæ Methanosulphonas.

Dose By intramuscular injection ¾–1½ gr 0·05–0·1 G

ACTION

These drugs have a specific action on the malaria parasite, affecting both the gametocytes and schizonts in tertian and quartan malaria, but acting only on the schizonts in sub-tertian malaria. It is well tolerated and may be used in blackwater fever and in cases of quinine idiosyncrasy. In ordinary therapeutic doses it does not usually give rise to toxic symptoms, but large doses may give rise to abdominal pain diarrhœa and a yellow discoloration of the skin and conjunctiva.

PAMAQUIN

Pamaquinum (Plasmoquine)

Dose ⅜–¾ gr 0·025–0·05 G

ACTION

Pamoquin is an anti malarial drug acting more powerfully on the gametocytes than the schizonts. It is most effective in benign tertian and quartan malaria and is of particular value as a prophylactic. It is commonly used in combination with quinine or mepachrine hydrochloride.

IPECACUANHA

Ipecacuanha.

The dried root, or rhizome and root of *Cephaelis Ipecacuanha*

It should contain not less than 2% of total alkaloids.

Composition The alkaloids Emetine and Cephæline When ipecacuanha is prescribed ipecacuanha pulverata should be dispensed

Ipecacuanha Pulverata.

Ipecacuanha reduced to a fine powder

Contains 2% total alkaloids.

Dose ½–2 gr 0·03–0·12 G As an emetic 15–30 gr 1–2 G

PREPARATIONS

1 Extractum Ipecacuanhæ Liquidum

Dose ½–2 min., 0·03–0·12 mil. As an emetic 10–30 min. 0·6– mils.

Strength 2% of alkaloids.

2. Tinctura Ipecacuanhæ

Dose 10–30 min 0·6–2 mils. As an emetic ½–1 fl. oz 15–30 mils

Strength 0·1% of alkaloids.

3 Pulvis Ipecacuanhæ et Opii

Contains 10% ipecacuanha pulverata

Dose 5–10 gr 0·3–0·6 G

4 Trochiscus Morphinæ et Ipecacuanhæ

Contains $\frac{1}{12}$ gr., 0·006 G of ipecacuanha

ACTION

Ipecacuanha is an expectorant acting by reflexly increasing the secretion of the bronchial glands In large doses it is an emetic as a result of its irritant effect on the stomach Large doses depress the heart

Emetinæ et Bismuthi Iodidum.

Contains 25–28% emetine 18–21% bismuth.

Dose 1–3 gr 0·06–0·2 G

Emetinæ Hydrochloridum

Dose By injection ½–1 gr 0·03–0·06 G

ACTION

Emetine is a specific for amoebic dysentery destroying the Amoebæ. It is excreted slowly and has a well marked cumulative action It has a depressant action on the cardiac muscle

CHINIOFON

Chiniofonum (Yatren, Pulvis Chiniofoni)

Chiniofon is a mixture of a complex organic compound containing iodine and sodium bicarbonate. It contains approximately 29% of the former and 20% of the latter

Dose 1–8 gr., 0·06–0·5 G

By rectal injection 15–75 gr 1–5 G

ACTION

Chiniofon is used in the treatment of amoebic dysentery in combination with injections of emetine.

SENEGA

Senega.

The dried root of *Polygala senega*

Active Principle Senegin a glucoside.

Dose 6–12 gr., 0·4–0·8 G

PREPARATIONS

1 Infusum Senegae Recens. Fresh infusion of senega. Should be used within twelve hours of preparation.

Dose ½–1 fl. oz., 15–30 mils. *Strength* 5%.

2. Infusum Senegae Concentratum.

Dose 30–60 min. 2–4 mils.

When diluted with seven volumes of distilled water it approximately equals the strength of the fresh infusion.

3 EXTRACTUM SENEGÆ LIQUIDUM

Dose 5–15 min., 0 3–1 mil

4 TINCTURA SENEGÆ

Dose 30-60 min 1–4 mils. *Strength* 20% of liquid extract of senega

ACTION

Senega is a stimulating expectorant of the reflex type Large doses produce vomiting owing to its irritant action on the stomach

QUILLAIA

Quillaia.

The dried inner part of the bark of *Quillaja saponaria* and other species.

Composition Chiefly saponin, a glucoside

Dose 1–3 gr 0·06–0 2 G

PREPARATIONS

1 TINCTURA QUILLAIÆ

Dose 30–60 min., 2–4 mils. *Strength* 5%

2 EXTRACTUM QUILLAIÆ LIQUIDUM

Dose 1½–3 min 0·1–0·2 mil

Liquid extract of quillaia has approximately twenty times the strength of tincture of quillaia

ACTION

Quillaia is a mild reflex expectorant, but it is liable to produce gastro-intestinal irritation.

VIRGINIAN PRUNE

Prunus Serotina.

The bark of *Prunus serotina* (wild cherry)

Chief constituent Amygdalin, a compound of glucose prussic acid and essential oil of bitter almonds

Dose 15–30 gr 1–2 G

PREPARATION

SYRUPUS PRUNI SEROTINÆ

Dose 30–120 min. 2–8 mils.

ACTION

Has a very mild sedative *expectorant* action.

BITTERS

CALUMBA

Calumba.

The dried root of *Jaterrhiza palmata.*

Composition An alkaloid Berberine and Calumbamine a bitter principle. There is no tannic acid.

Dose 10–30 gr 0·6–2 G

PREPARATIONS

1 INFUSUM CALUMBÆ RECENS.

Dose 1–2 fl. oz., 30–60 mils. *Strength* 5%.

N.B.—The infusion should be made with cold water and must be used within twelve hours of preparation.

2 INFUSUM CALUMBÆ CONCENTRATUM

Dose 30–60 min., 2–4 mils.

When diluted with seven times its volume of distilled water it equals approximately in strength the fresh infusion.

3 TINCTURA CALUMBÆ

Dose 30–60 min. 2–4 mils. *Strength* 10%.

ACTION

Calumba is a *bitter* It is a stomachic, acting reflexly by its action on the taste nerves in the mouth It also exerts a carminative action. As a

rectal injection it has an anthelmintic action on the threadworm It may be prescribed with iron salts since it contains no tannin

GENTIAN

Gentiana.

The dried root of *Gentiana lutea*

Composition The active principle Gentiopicrin It contains a trace of tannin

Dose 10–30 gr 0·6–2 G

PREPARATIONS

1 INFUSUM GENTIANÆ COMPOSITUM RECENS

Dose ½–1 fl oz., 15–30 mils. *Strength* Approximately 1 2%.

The fresh infusion must be used within twelve hours of preparation.

2 INFUSUM GENTIANÆ COMPOSITUM CONCENTRATUM

Dose 30–60 min 2–4 mils

When diluted with seven times its volume of distilled water it equals approximately in strength the fresh infusion

3 EXTRACTUM GENTIANÆ

Dose 2–8 gr 0·1 –0·5 G

4 TINCTURA GENTIANÆ COMPOSITA. Contains 10% of gentian.

Dose 30–60 min., 2–4 mils.

5 TINCTURA GENTIANÆ COMPOSITA CONCENTRATA

Dose 8–15 min 0·5–1 mil *Strength* 40%.

ACTION

Gentian is a bitter and its action is identical with that of calumba.

QUASSIA

Quassia.

The wood of the trunk and branches of *Picraena excelsa*

Composition The active principle Quassin There is no tannin.

Dose 2–8 gr 0 12–0·5 G

PREPARATIONS

1 Infusum Quassiæ Recens.

Dose ½–1 fl. oz., 15–30 mils. *Strength* 1%.

The fresh infusion must be used within twelve hours of preparation. It should be made with *cold* water The bitter principle is extracted with hot water

2. Infusum Quassiæ Concentratum.

Dose 30–60 mins., 2–4 mils.

When diluted with seven times its volume of distilled water it equals approximately in strength the fresh infusion

3 Tinctura Quassiæ.

Dose 30–60 min. 2–4 mils. *Strength* 10%

4 Tinctura Quassiæ Concentrata.

Dose 8–15 min. 0 5–1 mil. *Strength* 40%.

ACTION

Quassia is a bitter and has an action identical with that of gentian and calumba. It may be prescribed with iron salts, since it contains no tannin.

ORANGE PEEL

Aurantii Cortex Recens (Fresh Bitter Orange Peel)

The fresh outer part of the pericarp of the ripe fruit of *Citrus aurantium*

Contains a fixed oil and several glucosides.

PREPARATIONS

1 Tinctura Aurantii

Dose 30–60 min 2–4 mils *Strength* 25%.

2 Syrupus Aurantii

Dose 30–120 min 2–8 mils *Strength* 12.5%

3 Tinctura Aurantii Concentrata

Dose 15 min 0.5–1 mil *Strength* 100%

Concentrated tincture of orange has approximately four times the strength of tincture of orange

Aurantii Cortex Siccatus (Dried Bitter Orange Peel)

The dried outer part of the pericarp of the ripe fruit of *Citrus aurantium*

PREPARATIONS

1 Infusum Aurantii Concentratum

Dose 30–60 min., 2–4 mils.

When diluted with seven times its volume of distilled water its strength is approximately equal to that of the fresh infusion

2 Infusum Aurantii Recens (Fresh Infusion of Orange)

Dose ½–1 fl. oz 2–4 mils. *Strength* 5%.

ACTION

Orange peel is used as a flavouring agent. Dried bitter orange peel is a bitter

SERPENTARY

Serpentaria.

The dried rhizome and roots of *Aristolochia reticulata*

Composition Aristolochin a bitter principle a volatile oil, and a resin

Dose ½–1½ gr 0·05–1 G

Tinctura cinchonæ compositum contains 2 5% of serpentary

ACTION

Serpentary in small doses is a bitter and a stomachic. In large doses it produces vomiting and purgation.

PURGATIVES

ALOES

Aloe

The juice that flows from the transversely cut leaves of *Aloe chinensis* and *Aloe Perryi* evaporated to dryness

Composition The active principles Aloin and Emodin derivatives of Anthracene.

Dose 2–5 gr 0 12-0·3 G

PREPARATIONS

1 Pilula Aloes. Contains 58% of aloes.

Dose 4–8 gr 0·25–0 5 G

2 Pilula Aloes et Ferri. Contains 20% of aloes and 10% of exsiccated ferrous sulphate

Dose 4–8 gr 0·25–0·5 G

3 Pilula Aloes et Asafœtida. Contains 30% each of aloes and asafetida.

Aloes is also present in Pilula Rhei Composita and Pilula Colocynthidis et Hyoscyami.

Dose 4–8 gr., 0·25–0 5 G

Aloinum

A mixture of crystalline principles obtained from aloes

Dose ¼–1 gr., 0·015–0·06 G

ACTION

Aloes is a purgative by virtue of its powerful stimulant action on the large intestine The small intestine is unaffected Aloin has a similar action

Aloes stimulates uterine contractions in pregnant women, and may produce abortion. It is also an emmenagogue

CASCARA SAGRADA

Cascara Sagrada.

The dried bark of *Rhamnus purshianus*

Composition The active principle Emodin a derivative of Anthracene and Cascarin

Dose 20–60 gr 1–4 G

PREPARATIONS

1 Extractum Cascaræ Sagradæ Siccum

Dose 2–8 gr 0 12–0 5 G

2. Extractum Cascaræ Sagradæ Liquidum

Dose 30–60 min., 2–4 mils.

3 Elixir Cascaræ Sagradæ

Dose 30–60 min., 2–4 mils

ACTION

Cascara is a purgative acting on the large intestine. It is the mildest of the anthracene group of purgatives

RHUBARB

Rheum.

The dried rhizome of *Rheum officinale* and other species after part of the bark has been removed.

Composition Chrysarobin and Emodin the active principles, and Chrysophanic Acid all are derivatives of Anthracene Also Rheotannic Acid

Dose 3–15 gr 0 2–1 G

PREPARATIONS

1 Pulvis Rhei Compositus (Gregory's Powder) Contains ginger magnesia, and rhubarb (25%)

2 Pilula Rhei Composita. Contains 25% rhubarb and 20% aloes.

Dose 4–8 gr 0·25–0·5 G

3 Tinctura Rhei Composita.

Dose 30–60 min 2–4 mils. *Strength* 10%.

ACTION

Rhubarb in small doses is a stomachic. In larger doses it is a purgative acting on the large intestine stimulating peristalsis. Purgation is followed by constipation due to the tannic acid Chrysophanic acid is excreted in the urine colouring it yellow changing to reddish purple when the urine is made alkaline

SENNA

Sennæ Folium.

The dried leaflets of *Cassia acutifolia* and *Cassia angustifolia*

Composition Chrysophanic Acid and Emodin and Cathartic Acid a glucoside

Dose 10–30 gr 0·6–2 G

Sennæ Fructus

Senna pods. The dried ripe fruits of *Cassia acutifolia* and *Cassia angustifolia.*

Dose 10–30 gr 0·6–2 G

PREPARATIONS

1 Confectio Sennæ

Dose 60–120 gr 4–8 G *Strength* 10%.

2 Pulvis Glycerrhizæ Compositus Contains sulphur liquorice and senna (16%)

Dose 60–120 gr., 4–8 G

3 INFUSUM SENNÆ RECENS

Dose 1–2 fl oz 15–60 mils *Strength* Approximately 10%

The fresh infusion must be used within twelve hours of preparation

4 INFUSUM SENNÆ CONCENTRATUM

Dose 30–60 min 2–4 mils

When diluted with seven times its volume of distilled water it equals approximately in strength the fresh infusion

5 MISTURA SENNÆ COMPOSITA (Black Draught) Contains senna magnesium carbonate and liquorice

Dose 1–2 fl oz., 30–60 mils

6 SYRUPUS SENNÆ

Dose 30–120 min., 2–8 mils

7 EXTRACTUM SENNÆ LIQUIDUM

Dose 10–30 min. 0·6–2 mils.

ACTION

Senna is a purgative stimulating peristalsis in the large intestine It is however liable to cause griping

JALAP

Jalapa.

The dried tubercles of *Ipomœa purga*

Composition Jalapa Resin, containing Jalapin, a glucoside

Jalapa Pulverata.

Dose 5–20 gr., 0·3–1 2 G

PREPARATION

PULVIS JALAPÆ COMPOSITUS Contains potassium bitartrate ginger and jalap (30%)

Dose 10–60 gr 0·6–4 G

ACTION

Jalap is a drastic purgative and produces a hydragogue action—that is there is an abundant secretion from the intestinal glands giving rise to a watery motion It acts on both small and large intestines. There is some griping in the course of its action.

SCAMMONY

Ipomœa.

The dried root of *Ipomœa orizabensis* When extracted with alcohol it yields Scammony Resin.

Dose 5–20 gr 0·3–1·2 G

Scammoniæ Resina.

A mixture of resins obtained from Ipomœa. The chief constituent is Jalapin.

Dose ½–3 gr 0·03–0·2 G

ACTION

Scammony is a drastic purgative acting on both small and large intestine It causes some griping There is an outpouring of fluid from the intestinal glands

COLOCYNTH

Colocynthis.

The dried pulp of the fruit of *Citrullus colocynthis*

Chief Constituent Colocynthin a glucoside.

PREPARATIONS

1 Extractum Colocynthidis Compositum. Contains extract of aloes scammony resin and colocynth.

Dose 2–8 gr 0·12–0·5 G

2 Pilula Colocynthidis et Hyoscyami Contains hyoscyamus aloes, scammony and colocynth (20%)

Dose 4–8 gr 0·25–0·5 G

ACTION

A purgative of the drastic hydragogue type It acts on both small and large intestines. It causes severe griping

PODOPHYLLUM

Podophyllum

The dried roots of *Podophyllum peltatum*

Composition The alkaloid Berberine and Podophyllin Resin which is the active principle

Podophyllum Indicum (Indian Podophyllum)

The dried rhizome and roots of *Podophyllum emodi*

Dose -10 gr 0 12-0 6 G

Podophylli Resina.

A mixture of resins obtained from podophyllum or Indian podophyllum.

Dose ¼-1 gr 0·015-0·06 G

ACTION

Both podophyllum and Indian podophyllum are purgatives and cholagogues. It gives rise to much griping

CASTOR OIL

Oleum Ricini.

The oil expressed from the seeds of *Ricinus communis*

The active principle is ricinoleic acid liberated from ricinoleate of glyceryl in the small intestine

Dose 60-240 min 4-16 mils.

Acidum Ricinoleicum.

A mixture of fatty acids obtained by the hydrolysis of castor oil

ACTION

Castor oil is a purgative the action being chiefly on the small intestine to a lesser extent on the large intestine Small doses produce constipation

PHENOLPHTHALEIN

Phenolphthaleinum.

This is a *derivative of phenol*

Dose 1–5 gr., 0·06–0·3 G

ACTION

Phenolphthalein is a purgative. Its action is similar to the anthracene group—that is on the large intestine Part of the drug is absorbed and excreted in the bile.

Phenolphthalein has a cumulative action and if taken regularly skin rashes and occasionally renal irritation may occur

AGAR

Agar (Agar agar)

A dried gelatinous substance extracted from various algæ.

Dose 60–240 gr., 4–16 G

ACTION

Agar is a purgative. It absorbs water in the in testine and swells up thus increasing the volume of the fæces, and so stimulating peristalsis.

ASTRINGENTS

TANNIC ACID

Acidum Tannicum (Tannin)

Tannic acid is extracted by water-saturated ether from galls which have been subjected to a special *fermentation.*

Dose 5–10 gr., 0 3–0·6 G

PREPARATIONS

1 Glycerinum Acidi Tannici

Dose 10–30 min 0·6–2 mils. *Strength* 15%.

2 SUPPOSITORIUM ACIDI TANNICI Contains 3 gr (o G) tannic acid

3 TROCHISCUS ACIDI TANNICI Contains ½ gr (0·03 G) tannic acid

4 UNGUENTUM ACIDI TANNICI Contains o% of tannic acid

5 PASTA ACIDI TANNICI Contains 5% of tannic acid

ACTION

Tannic acid coagulates proteins and has therefore an astringent action Because of its power of precipitating proteins it is used in the treatment of burns It is also a hæmostatic In the stomach and intestine it acts as an astringent and causes constipation In the small intestine most of the tannic acid is broken down into gallic acid which does not coagulate protein Enough tannic acid however reaches the large intestine to produce a therapeutic action The disadvantages of tannic acid are its unpleasant taste and its irritant effect on the stomach

CATECHU

Catechu

An extract of leaves and young shoots of *Uncaria gambier*

Composition Catechu Tannic Acid and Pyrocatechin

Dose 5–15 gr., 0·3–1 G

PREPARATION

TINCTURA CATECHU

Dose 30–60 min., 2–4 mils. *Strength* 16%.

ACTION

Is a strong astringent due to the presence of catechu tannic acid It has much less tendency to cause irritation of the stomach.

KRAMERIA

Krameria (Rhatany)

The dried root of *Krameria triandra* Contains krameria tannic acid.

Dose 10–30 gr 0·6–2 G

PREPARATIONS

1 Extractum Krameriæ

Dose 5–15 gr., 0·03–1 G

2 Tinctura Krameriæ

Dose 30–60 min., 2–4 mils. *Strength* 20%.

3 Trochiscus Krameriæ Contains 1 gr (0·06 G) of extract of krameria.

4 Trochiscus Krameriæ et Cocainæ. Contains 1 gr (0·06 G) of extract of krameria and 1/20 gr (0·003 G) of cocaine hydrochloride.

ACTION

Is a strong astringent due to the krameria tannic acid It gives rise to very little gastric irritation

HAMAMELIS

Hamamelis (Witch Hazel)

The leaves of *Hamamelis virginiana*

Composition Tannic Acid is the chief constituent.

PREPARATIONS

1 Extractum Hamamelidis Liquidum

Dose 30–60 min., 2–4 mils

2 Unguentum Hamamelidis Contains 10 % of liquid extract of hamamelis.

ACTION

An astringent and hæmostatic due to its tannic acid.

VOLATILE OILS

BUCHU

Buchu

The dried leaves of *Barosma betulina* Contains a volatile oil.

Dose 15–30 gr 1–2 G

PREPARATIONS

1 Infusum Buchu Recens

Dose 1–2 fl oz 30–60 mils

The fresh infusion should be used within twelve hours of preparation

2 Infusum Buchu Concentratum

Dose 60–120 min 2–4 mils

When diluted with seven times its volume of distilled water it equals approximately in strength the fresh infusion

ACTION

Is a mild diuretic and urinary antiseptic.

COPAIBA

Copaiba.

The oleo-resin obtained from the trunk of *Copaifera lansdorfii* and other species

Composition Oil of Copaiba and a resin.

Dose 10–30 min 0·6–2 mils.

ACTION

Externally it is a rubefacient. Internally it acts as a mild diuretic and urinary antiseptic.

SANDAL-WOOD OIL

Oleum Santali.

The volatile oil obtained from the wood of *Santalum album*

Dose 5–15 min., 0·3–1 mil.

Oleum Santali Australiensis

The oil distilled from the wood of *Eucarya spicata.*

Dose 5–15 min., 0·3–1 mil.

ACTION

Sandal wood oil is a mild urinary antiseptic.

BALSAM OF PERU

Balsamum Peruvianum.

A balsam exuded from the trunk of *Myroxylon pereiræ*

Composition A volatile oil consisting of Cinnamon Styracin, Peruvin and Styrone. It also contains cinnamic acid, benzoic acid and resins.

Dose 5–15 min. 0·3–1 mil

ACTION

Externally it is a mild antiseptic and stimulant Internally it is a carminative stomachic and disinfectant. It is used as an inhalation in pharyngitis and laryngitis. It is also employed in scabies.

BALSAM OF TOLU

Balsamum Tolutanum

A balsam obtained by making incisions in the trunk of *Myroxylon toluifera*

Composition Toluene Benzoic and Cinnamic Acids and Benzyl Benzoate.

Dose 5–15 gr 0·3–1 G

PREPARATIONS

1 SYRUPUS TOLUTANUS

Dose 30–120 min 2–8 mils. *Strength* 25%

2 TINCTURA TOLUTANA

Dose 30–60 min 2–4 mils. *Strength* 10%

Balsam of Tolu is present in Tinctura Benzoini Composita. (*Strength* 2 5%)

3 TINCTURA TOLUTANA CONCENTRATA

Dose 8–15 min. 0·5–1 mil *Strength* 40%

ACTION

Balsam of Tolu is an antiseptic and expectorant

STYRAX

Styrax (Storax)

A balsam obtained from the trunk of *Liquidambar orientalis*

Composition Styrene Styracine and Cinnamic Acid

Dose 10–30 gr., 0·6–2 G

Tinctura Benzoini Composita contains 7 5% of Styrax

ACTION

Styrax is a mild antiseptic It is used as an ointment in scabies and other parasitic skin diseases

OIL OF TURPENTINE

Oleum Terebinthinæ

The oil distilled from the oleo-resin obtained from *Pinus sylvestris* and other species of *Pinus*

Contains a number of hydrocarbons known as terpenes

Dose 3–10 min 0·2–0·6 mil. As an anthelmintic 120–240 min 8–16 mils.

PREPARATIONS

1 LINIMENTUM TEREBINTHINÆ Contains 65% oil of turpentine.

2 LINIMENTUM TEREBINTHINÆ ACETICUM Contains 44 5% of oil of turpentine

ACTION

Externally oil of turpentine is a counter irritant and rubefacient Internally it is a strong carminative an expectorant, and an anthelmintic against tapeworm. In large doses it irritates the kidney bladder and urethra and may cause oliguria and hæmaturia. Oil of turpentine is also an abortifacient.

OIL OF SIBERIAN FIR

Oleum Abietis (Oil of Pine)

The oil distilled from the fresh leaves of *Abies sibirica*

ACTION

An antiseptic and deodorant.

COLOPHONY

Colophonium (Resin)

The residue left after distilling oil of turpentine from the crude oleo-resin of various species of Pinus.

Composition Abietic Acid.

PREPARATION

EMPLASTRUM COLOPHONII Contains 10% of colophony

ACTION

Colophony is a mild antiseptic and stimulant when used externally

TEREBENE

Terebenum

A mixture of dipentene and other hydrocarbons obtained by the action of sulphuric acid on oil of turpentine

Dose 5–15 min. 0·3–1 mil

ACTION

Is an antiseptic disinfectant and deodorant

CAJUPUT OIL

Oleum Cajuputi.

The oil distilled from the leaves of *Melaleuca leucadendron* and other species. Contains cajaputene hydrate.

Dose 1–3 min 0·06–0·2 mil

PREPARATION

SPIRITUS CAJUPUTI

Dose 5–20 min. 0·3–1·2 mil. *Strength* 10%.

ACTION

Externally a counter irritant and rubefacient Internally it is a stomachic and carminative.

CLOVES

Caryophyllum.

The dried flower buds of *Eugenia aromatica*

Composition Oleum Caryophylli, Caryophyllin, and Eugenin.

Dose 2–5 gr 0·12–0·3 G

PREPARATIONS

1 INFUSUM CARYOPHYLLI RECENS

Dose ½–1 fl. oz 15–30 mils.

Strength Approximately 2·5%

Fresh infusion of clove should be used within twelve hours of preparation.

2 INFUSUM CARYOPHYLLI CONCENTRATUM.

Dose 30–60 min., 2–4 mils.

Concentrated infusion of clove when diluted with seven times its volume of distilled water is approximately equal in strength to the fresh infusion.

Oleum Caryophylli.

Contains 85–90% of eugenol.

Dose 1–3 min 0·06–0·2 mil.

ACTION

Externally a counter irritant and rubefacient, and a mild local anæsthetic internally it is a stomachic and carminative.

NUTMEG

Myristica.

The dried kernel of the seed of *Myristica fragrans*

Composition The official volatile oil and a fixed oil

Dose 5–10 gr., 0 3–0·6 G

Pulvis Cretæ Aromaticus contains 8% of Nutmeg

Oleum Myristicæ

The oil distilled from Nutmeg

Dose 1–3 min. 0·06–0 2 mil.

ACTION

Nutmeg is a carminative and stomachic.

OIL OF EUCALYPTUS

Oleum Eucalypti.

The oil distilled from the leaves of certain plants of the species *Eucalyptus* Contains not less than 70% Eucalyptol (Cineol)

Dose 1–3 min., 0·06–0·2 mil.

Eucalyptol

Dose 1–3 min 0·06–0·2 mil

ACTION

Externally oil of eucalyptus is an antiseptic deodorant and rubefacient. Internally it is a stomachic. Large doses depress the central nervous system and may cause severe gastro-intestinal irritation

OIL OF ROSEMARY

Oleum Rosemarini.

The oil distilled from the flowering tops of *Rosmarinus officinalis*

Composition Pinene Cineol Menthol etc

Dose 1–3 min., 0·06–0·2 mil.

ACTION

Is a mild antiseptic and a carminative

CINNAMON

Cinnamomum

The dried inner bark of shoots from the stocks of *Cinnamomum zeylanicum*

Constituents The volatile Oil of Cinnamon Tannin sugar and gum.

Dose 5–20 gr 0·3–1·2 G

PREPARATION

Aqua Cinnamomi Destillata.

Dose ½–1 fl oz. 15–30 mils *Strength* 5% of cinnamon.

Oleum Cinnamomi

Contains cinnamic aldehyde and cinnamic acid.

Dose 1–3 min. 0·06–0·2 mil.

PREPARATION

AQUA CINNAMOMI CONCENTRATA

Dose 5–15 min 0·3–1 mil. *Strength* 2% of oil of cinnamon.

Concentrated cinnamon water when diluted with thirty nine times its volume of distilled water is approximately equal in strength to the Distilled Water

ACTION

A stomachic and carminative. Has some astringent action owing to its tannic acid

MYRRH

Myrrha.

An oleo-gum resin obtained from the stem of *Commiphora molmol* and other species.

Composition A volatile oil Myrrhol and a resin Myrrhin

Dose 5–15 gr 0·3–1 G

PREPARATION

TINCTURA MYRRHÆ

Dose 30–60 min. 2–4 mils. *Strength* 20%

ACTION

Externally a mild antiseptic and stimulant internally a carminative expectorant and mild urinary antiseptic.

PEPPER

Capsicum.

The dried ripe fruit of *Capsicum minimum*

Composition A volatile oil and Capsicine

Dose ½–2 gr 0·06–0·12 G

PREPARATIONS

1 TINCTURA CAPSICI

Dose 5-15 min 0·3-1 mil *Strength* 5%

2 TINCTURA CAPSICI CONCENTRATA

Dose 1-4 min, 0·06-0·25 mil *Strength* 50% of concentrated tincture of capsicum

3 UNGUENTUM CAPSICI *Strength* Approximately 0%

ACTION

Externally a counter irritant and rubefacient internally a stomachic and carminative

GINGER

Zingiber

The scraped and dried rhizome of *Zingiber officinale*

Composition A volatile oil and Gingerol

Dose 5-15 gr., 0·3-1 G

PREPARATIONS

1 SYRUPUS ZINGIBERIS Contains 5% of strong tincture of ginger

Dose 30-120 min 2-8 mils

2. TINCTURA ZINGIBERIS MITIS Contains 20% of strong tincture of ginger

Dose 30-60 min., 2-4 mils

3 TINCTURA ZINGIBERIS FORTIS

Dose 5-10 min 0·3-0·6 mil *Strength* 50% of ginger

ACTION

A stomachic carminative and flavouring agent.

CARDAMOMS

Cardamomum.

The dried seeds of *Elettaria cardamomum* Contains a volatile oil.

Dose 10–30 gr., 0·6–2 G

PREPARATIONS

1 TINCTURA CARDAMOMI COMPOSITA Contains cardamoms (1 4%) caraway cinnamon and cochineal

Dose 30–60 min. 2–4 mils

2 TINCTURA CARDAMOMI COMPOSITA CONCENTRATA.

Dose 8–15 min., 0·5–1 mil. *Strength* 5·6%.

ACTION

Is a stomachic and carminative.

CARAWAY

Carum

The dried fruit of *Carum carvi* Contains the volatile oil oil of caraway

Dose 15–30 gr 1–2 G

Oleum Cari

Dose 1–3 min 0·06–0·2 mil.

ACTION

Is a stomachic and carminative.

OIL OF ANISEED

Oleum Anisi.

The oil distilled from the dried ripe fruit of *Pimpinella anisum*

Composition Anethol Anisic Aldehyde.

Dose 1–3 min., 0·06–0·2 mil

ACTION

A carminative and mild expectorant.

CORIANDER

Coriandrum

The dried ripe fruit of *Coriandrum sativum*

Dose 5–15 gr 0 3–1 G

Oleum Coriandri

The volatile oil distilled from Coriander

Composition Coriandrol and Pinene

Dose 1–3 min 0·06–0 mil

ACTION

A stomachic and carminative

FENNEL

Fœniculum

The dried ripe fruit of *Fœniculum vulgare* Contains a volatile oil similar to oil of anise.

Dose 5–10 gr., 0 3–0·6 G

ACTION

A stomachic and carminative

DILL

Anethum

The dried ripe fruit of *Anethum graveolens* Contains the volatile oil oil of dill *

PREPARATIONS

1 Aqua Anethi Destillata

Dose ½–1 fl. oz., 15–30 mils *Strength* 5% of dill

2 Aqua Anethi Concentrata Contains 2% of oil of dill

Dose 5–15 min 0·3–1 mil

Concentrated dill water when diluted with thirty nine times its volume of distilled water is approximately equal in strength to the Distilled Water

ACTION

Externally a counter irritant internally a carminative

CANTHARIDES

Cantharidinum.

Obtained from various species of *Cantharis* (Spanish Fly) or of *Mylabris* Both are beetles.

PREPARATIONS

1 EMPLASTRUM CANTHARIDINI Contains 0·2% of cantharidin

2 LIQUOR EPISPASTICUS. Contains 0·4% of cantharidin and 2 5% of castor oil

ACTION

Externally a powerful irritant and vesicant. It is also a counter irritant. Internally it produces *severe gastro-intestinal irritation* with vomiting, diarrhoea and collapse if the dose is large cantharidin is excreted by the kidneys, which it irritates. Toxic doses produce nephritis Its use as an aphrodisiac is dangerous.

HYDNOCARPUS OIL

Oleum Hydnocarpi.

Obtained from the fresh ripe seeds of *Hydnocarpus Wightiana*

Dose 5–15 min. (0·3–1 mil) gradually increasing to 60 min (4 mils) By subcutaneous and intramuscular injection 30 min. (2 mils) gradually increasing to 75 min (5 mils)

Oleum Hydnocarpi Æthylicum.

Dose : 5–15 min. (0·3–1 mil) gradually increasing to 60 min. (4 mils) By subcutaneous and intramuscular injection 30 min. (2 mils) gradually increasing to 75 min (5 mils)

ACTION

The drug is used extensively in the treatment of leprosy

DEMULCENTS

LINSEED

Linum.

The dried ripe seeds of *Linum usitatissimum* Contains linseed oil

Linum Contusum (Crushed Linseed)

Linseed reduced to powder

Oleum Lini

A compound of glyceryl with linoleic acid

Dose ½–1 fl oz. 15–30 mils.

ACTION

Linseed is a demulcent. The crushed linseed is used in the preparation of linseed poultices which relieve pain and act as a mild counter irritant

OLIVE OIL

Oleum Olivæ

The fixed oil from the fruit *Olea europæa*

Composition Olein and Palmitin, compounds of glyceryl with oleic acid and palmitic acid respectively

Dose ½–1 fl oz. 15–30 mils

ACTION

Olive oil externally is an emollient Internally it is a demulcent and a mild laxative It inhibits the secretion of gastric juice

COTTONSEED OIL

Oleum Gossypii Seminis.

The fixed oil obtained from the seeds of various species of *Gossypium*

Dose ½–1 fl oz. 15–30 mils.

ACTION

Cottonseed oil is used externally as an emollient and internally as a demulcent.

ALMONDS

Oleum Amygdalæ

The fixed oil obtained from the seeds of *Prunus communis*

Dose ½–1 fl. oz., 15–30 mils.

Oleum Amygdalæ Volatile Purificatum.

Dose ¼–1 min., 0·016–0·06 mil.

The above essential oil freed from hydrocyanic acid.

ACTION

It is a demulcent.

LIQUORICE

Glycyrrhiza.

The peeled root and stems of *Glycyrrhiza glabra* and other species

Composition A glucoside Glycyrrhizin, and Asparagin.

Dose 15–60 gr., 1–4 G

PREPARATIONS

1 Extractum Glycyrrhizæ

Dose 10–30 gr., 0·6–2 G

2 Extractum Glycyrrhizæ Liquidum

Dose 30–60 min., 2–4 mils.

3 Pulvis Glycyrrhizæ Compositus Contains 16% of powdered liquorice 16% of senna and 8% of sublimed sulphur

Dose 60–120 gr 4–8 G

ACTION

Liquorice is a demulcent. It is slightly laxative

TRAGACANTH

Tragacantha.

A gummy exudation obtained by incision from *Astragalus gummifer* and other species

Composition Tragacanth is a mixture of Tragacanthin and Arabin both gums.

PREPARATIONS

1 Mucilago Tragacanthæ Contains 1 25% of tragacanth

Dose 60–240 min 4–16 mils.

2 Pulvis Tragacanthæ Compositus Contains gum acacia and tragacanth (15%)

Dose 10–60 gr 0·6–4 G

ACTION

Tragacanth is a demulcent

ACACIA

Acacia (Gum Acacia)

A gummy exudation from the stem and branches of *Acacia senegal* and other species of acacia. Acacia contains arabin or arabic acid in combination with calcium, magnesium and potassium.

PREPARATION

Mucilago Acaciæ Contains 40% of gum acacia.

Dose 60–240 min. 4–16 mils.

paralyses but does not kill the worms being expell
from the bowel by the purgative Toxic sympto
are nausea, vomiting and yellow vision.' Lar
doses may produce clonic convulsions, which may
followed by coma and death

OIL OF CHENOPODIUM

Oleum Chenopodii

The oil distilled from the fresh flowering plants
Chenopodium ambrosioides

Composition It is a mixture of various terpene
The most important constituent is Ascaridole, whi
constitutes 65% of the oil.

Dose 3–15 min. 0·2–1 mil.

ACTION

Chenopodium is an anthelmintic against hook
worms but it is also used in the treatment of roun
worms. Toxic effects are common—*e g* vertig
nausea, tinnitus and deafness. A cumulative effe
may occur

PELLETIERINE

Pelletierinae Tannas.

A mixture of the tannates of the alkaloids obtaine
from the bark of the root and stem of *Punica gran*
tum (pomegranate)

Dose 2–8 gr., 0·12–0·5 G

ACTION

Pelletierine is an anthelmintic against the tap
worm It has little effect on roundworms Th
tannate when given on an empty stomach passe
intact through the stomach and is dissolved in th
intestine

Severe toxic effects are rare but occasionall
headache vomiting, diarrhoea and prostration occur

CARBON TETRACHLORIDE

Carbonel Tetrachloridum

Dose 30–60 min 2–4 mils

ACTION

This drug is an anthelmintic for hookworms If pure, toxic effects are rare with ordinary doses It is dangerous to give it to alcoholics nor should alcohol be taken immediately after administration

In toxic doses it causes injury to the liver in fatal cases extensive fatty degeneration of the liver being found

THYMOL

Thymol.

A crystalline substance obtained from the volatile oils of *Thymus vulgaris* *Moranda punctata* and *Carum copticum*

Dose ½–2 gr 0·03–0·12 G As an anthelmintic 15–30 gr 1–2 G

ACTION

Thymol is a strong antiseptic and parasiticide It is anthelmintic against hookworms Large doses irritate the stomach and intestine and give rise to headache tinnitus vomiting and collapse after absorption

BENZOATES AND SALICYLATES

Benzoinum

A balsamic resin obtained from the stem of *Styrax benzoin*

Composition Benzoic Acid is the chief constituent

Dose 10–30 gr., 0·6–2 G

PREPARATIONS

1 Adeps Benzoinatus (Benzoated Lard) Contains 3% benzoin.

2 TINCTURA BENZOINI COMPOSITA (Friar's Balsam) Contains storax tolu aloes, and benzoin (10%)

Dose 30–60 min., 2–4 mils.

Acidum Benzoicum

Dose 5–15 gr., 0·3–1 G

Sodii Benzoas.

Dose 5–30 gr 0·3–2 G

ACTION

Externally benzoic acid is an antiseptic.

Benzoic acid is excreted as hippuric acid, the conversion taking place in the kidneys. The urine is thus rendered more acid, putrefaction being inhibited It is also an expectorant. The acid and its salts have a mild antipyretic action. Tinct. benzoin co is used as an inhalation in acute laryngitis and bronchitis

Benzylis Benzoas.

Dose 5–8 min 0·3–0·5 mil.

ACTION

Benzyl benzoate is chiefly used as a fungicide in scabies. It has also an antispasmodic action and is employed in intestinal biliary and renal colic etc

Salicinum.

A crystalline glucoside obtained from the bark of various species of *Salix* and of *Populus*

Dose 5–15 gr., 0·3–1 G

Acidum Salicylicum

Obtained from natural salicylates such as oil of wintergreen or synthetically

Dose 5–10 gr., 0·3–0 6 G

PREPARATION

UNGUENTUM ACIDI SALICYLICI Contains 2% of salicylic acid

Sodii Salicylas.

Dose 10–30 gr 0·6–2 G

Methylis Salicylas.

Dose 5–15 min., 0 3–1 mil

Acidum Acetylsalicylicum (Aspirin)

Dose 5–15 gr 0·3–1 G

ACTION

The salicylates have an irritant action on the stomach especially salicylic acid and are liable to cause vomiting

Salicylic acid is employed in skin diseases as a keratolytic to reduce excessive scaling and hypertrophy of the horny layers of the skin

The salicylates are antipyretics this action being most marked in rheumatic fever they have less effect in other fevers. In rheumatic fever sodium salicylate if given in large doses brings about a rapid fall in the temperature and relief of pain It has unfortunately no effect on rheumatic carditis and does not lessen the incidence of cardiac lesions

Salicylates when given in full therapeutic doses produce mild toxic effects such as vomiting headache tinnitus deafness and sweating Severe toxic effects—*e.g* diarrhœa, skin rashes delirium and hallucinations—occasionally occur Rarely coma and respiratory failure are met with These dangerous toxic effects are due to a direct action on the central nervous system and they resemble those of acidosis

They sometimes appear after comparatively small doses in persons who have an idiosyncrasy to the drug

Sodium salicylate has also a cholagogic effect, increasing the amount and fluidity of the bile Methyl salicylate is absorbed by the skin and is used as a local application in lumbago and sciatica

Oleum Morrhuæ (Cod-liver Oil)

The oil expressed from the fresh liver of the cod *Gadus morrhua*

Composition Olein (85%) Palmitin and Stearin fatty acids, oleic palmitic, and stearic acids.

1 G contains 600 units of vitamin A and 85 units of vitamin D

Dose—Prophylactic 15–30 min., 1–2 mils three times a day *Therapeutic* 45–90 min. 3–6 mils three times a day

PREPARATIONS

1 Extractum Malti cum Oleo Morrhuæ. Contains 15% of cod liver oil

Dose 60–240 min., 4–16 mils.

2 Emulsio Olei Morrhuæ. Contains 50% of cod liver oil

Dose—Prophylactic 30–60 min 2–4 mils. (Contains approx. 1,000–2 000 units of vitamin A and 100–200 units of vitamin D) *Therapeutic* 90–180 min 6–12 mils daily (Contains approx. 3 000–6 000 units of vitamin A and 300–600 units of vitamin D)

Oleum Hippoglossi (Halibut liver Oil)

Contains in each gramme not less than 30 000 units of vitamin A activity

Dose 1–5 min 0·06–0·3 mil Contains approx. 1 500–7 500 units of vitamin A The vitamin D activity varies it is usually between 2 500 and 3,500 units per gramme

ACTION OF VITAMIN A

Vitamin A is a fat soluble vitamin and being frequently associated in nature with vitamin D was for long not differentiated from it It is a break down product of carotene the yellow plant pigment and it is an alcohol

Green vegetables are the chief natural source of the vitamin but as it is stored in the liver it is

present in large amounts in certain liver oils especially fish-liver oils It is also present in moderate amounts in butter and milk The daily minimum requirements of vitamin A are estimated to be 1 mg of carotene or 1 600 units the optimum amounts being 3 mg of carotene or 5 000 units

The chief effect of deficiency of vitamin A in animals is an atrophy of epithelial tissue followed by proliferation of the basal cells with subsequent keratinisation of the new cells This reduces the power of the epithelium to resist infection The conjunctivae trachea and bronchi are chiefly affected

Gross deficiency of vitamin A in children may produce an ophthalmia similar to that which occurs in animals. Such degrees of deficiency are very rare in Europe Partial deficiency of the vitamin may occur but very little is known at present about the effects which it may produce The power to see in dim light is impaired by partial deficiency of vitamin A and severe deficiencies may result in night blindness. Visual purple on which the power to see in a dim light is dependent is formed in the eye from vitamin A

ACTION OF VITAMIN D

Vitamin D is a fat-soluble vitamin which is not found in more than moderate amounts in foods. Milk butter and cheese are the chief sources It is however present in large amounts in fish liver oils

It is now known that vitamin D is a sterol allied to cholesterol and it has been named calciferol It is produced by the irradiation of ergosterol and it can be prepared synthetically It is also formed naturally by the action of ultra violet light present in the sunshine on the skin.

Vitamin D deficiency results in rickets, a disease of infancy though it can also occur at other ages. In rickets there is a profound derangement in calcium metabolism and instead of normal bone a non calcified tissue osteoid, is laid down The bones are soft and bend easily Deformities of the skeleton are

therefore a prominent feature of the disease. This derangement of calcium metabolism is, partly at any rate due to deficient absorption of calcium from the gut which is the result of deficiency of vitamin D

VITAMIN B COMPLEX

Pulvis Vitamini B_1

This is an adsorbate of the anti-neuritic vitamin on Fuller's earth. It is prepared from rice polishings yeast or wheat embryo

Dose—Prophylactic (daily) 15–30 gr 1–2 G (100–200 units) *Therapeutic (daily)* 30–90 gr 2–6 G (200–600 units)

N.B.—1 gramme contains 100 units of antineuritic activity

Aneurinae Hydrochloridum (Vitamin B_1)

May be obtained from rice polishings yeast and other natural sources or by synthesis. 1 gramme contains 320 000 units of antineuritic activity (vitamin B_1)

Doses—Prophylactic (daily) 1/200–1/100 gr, 0·0003–0·0006 G (100–200 units) *Therapeutic (daily)* 1/100–1/35 gr 0·0006–0·0018 G (200–600 units)

Acidum Nicotinicum.

Dose: ¾–1½ gr 0·05–0·1 G

Nicotinamidum (Nicotinic Acid Amide)

Dose ⅓–1½ gr 0·02–0·1 G

Riboflavina (Riboflavin Lactoflavin)

Dose 1/60–1/6 gr 0·001–0·01 G

ACTION

It has now been demonstrated that vitamin B is not a single vitamin, but consists of a number of different vitamins all present in yeast extracts Only three appear to be of any importance in man

Thiamin or Aneurin.

Thiamin is a complex chemical substance Its chief natural source is yeast

Thiamin is essential for the normal metabolism of carbohydrate If it is deficient cellular metabolism is deranged particularly that of the nervous system

Deficiency of thiamin results in the disease beri beri the chief feature of which is polyneuritis This disease occurs mainly among the rice-eating nations of the East The disease increased enormously when polished rice was eaten This was found to be due to the fact that the essential thiamin was present only in the outer husk of the rice grain and if this was polished away the individual was liable to develop beri beri The disease could be cured by administering extract of rice polishings

Complete deficiency of thiamin is rare in Europe but partial deficiency may occur more frequently than is generally recognised and may be responsible for much ill health Parenteral administration of thiamin has proved of value in polyneuritis.

The daily requirements of thiamin are about 500 units or 1 5 mg of the pure vitamin

Nicotinic Acid.

This vitamin is found in meat and liver as well as in yeast extracts Deficiency of nicotinic acid results in the disease pellagra which is common in maize-eating countries. The disease can be rapidly cured by administering about 100 mg of nicotinic acid daily

Riboflavin.

This vitamin is the colouring matter in skimmed milk which is rich in riboflavin It has been syn thesised

Symptoms due to deficiency of riboflavin have only been recognised in the last two years They con sist of

(a) Ocular lesions—keratitis photophobia dim ness of vision and lachrymation

(b) Oral lesions—linear fissures at the angles of the mouth and a flattening of the papillæ of the tongue which becomes magenta red in colour

(c) Dermal lesions—seborrhoeic accumulations in the folds of the skin especially in the naso-labial folds and around the eyelids and in the ears.

The estimated daily requirement of riboflavin is 2 5–3 mg

VITAMIN C

Acidum Ascorbicum (Vitamin C)

Ascorbic acid is obtained from the ripe fruit of *Capsicum annuum* or other vegetable sources or by synthesis It is a colourless crystalline substance and is water-soluble

Dose—Prophylactic (daily) ¾–¾ gr., 0·0 5–0·05 G (500–1 000 units) *Therapeutic (daily)* 1½–4 gr., 0·1–0·25 G (2 000–5 000 units)

N B—1 gramme contains 20 000 units of anti-scorbutic activity

ACTION

This vitamin is a carbohydrate with a relatively simple structure Its active form is lævo-rotatory It is now synthesised on a large scale Though most animals can manufacture ascorbic acid apes and man depend on their diet for the vitamin In man ascorbic acid occurs in large amounts in the supra renal gland The chief natural sources of vitamin C are citrus fruits and green vegetables. Germinating grain is also rich in the vitamin It is present in fresh milk, but is destroyed by heat. The daily requirements of vitamin C are about 50 mg

Deficiency of vitamin C results in scurvy a disease in which there is a widespread tendency to hæmorrhage from mucous membranes, beneath the periosteum of bones, etc. This hæmorrhagic tendency is thought to be due to an increase in capillary per

meability to red blood cells Scurvy used to be a common disease on board ship owing to the absence of fresh fruit nowadays it is rarely met with in adults except in famine conditions but it is still seen in infancy though even at this age it is becoming rare owing to the prophylactic use of orange juice in bottle-fed babies Partial deficiency of vitamin C may occur in children as saturation tests suggest but it is not known exactly what clinical effects are produced

Ascorbic acid is essential for the proper maturation of the red blood corpuscles and this is one of the factors causing the anæmia present in scurvy

VITAMIN K

Vitamin K is widely distributed in nature it is present in alfalfa spinach, sprouting oats soya bean oil and some vegetable oils but not in fish-liver oils

The substance obtained from alfalfa is known as vitamin K_1 another compound with vitamin K activity can be isolated from sardine meal It is known as vitamin K_2 In addition to these two substances two other compounds which can be prepared synthetically have vitamin K activity Of these methyl naphthoquinone has an activity equal to vitamin K_1

Menaphthonum (Menadione Methyl naphthoquinone)

Dose By intramuscular injection $\frac{1}{12}$–$\frac{1}{6}$ gr 0·005–0·01 G

Acetomenaphthonum.

Dose $\frac{1}{6}$ 1 gr 0·01–0·06 G

ACTION

Deficiency of vitamin K results in hæmorrhages due to a delayed coagulation time This is associated with a fall in the prothrombin level in the

blood. It is now thought that vitamin K is in some way essential to the formation of *prothrombin* which takes place in the liver. As a rule animals obtain sufficient vitamin K from their diet or from the products of bacterial metabolism in the intestine.

Deficiencies may arise from (*a*) an inadequate intake in the diet, (*b*) impairment of absorption,—this occurs if there is a deficiency of bile in the intestine which arises in obstructive jaundice, (*c*) severe damage to the liver which interferes with the formation of prothrombin.

Vitamin K deficiency may occur in new-born babies and is the cause of the hæmorrhagic disease of the new born. It can be prevented by giving the vitamin to mothers a few hours before delivery.

Bleeding due to defective vitamin K absorption occurs in obstructive jaundice since the vitamin is not absorbed in the absence of bile salts. To secure absorption from the bowel the vitamin must be given in conjunction with bile salts. It may also be injected parenterally.

Vitamin K is of no value in the bleeding due to hæmophilia or purpura.

VITAMIN E

This vitamin is not yet official.

It is an oil-soluble substance occurring in the oil from wheat-germ, rice-germ and maize and in green leaves—*e.g.*, lettuce. From wheat-germ oil an alcohol tocopherol which has a high vitamin E activity has been isolated. It has also been synthesised.

Deficiency in vitamin E in female animals causes abortion, in male animals it causes degeneration of the germinal epithelium and consequent sterility.

Partial deficiency may rarely occur in man. It is used for habitual abortion and in cases of threatened abortion. It seems also to be of value in pregnancy toxæmia.

HORMONE SUBSTANCES

SUPRARENAL GLAND

Adrenalina (Suprarenin Adrenine Epinephrine)

The secretion of the medulla of the suprarenal glands.

Dose 1/600–1/120 gr 0·1–0·5 mg—by injection

PREPARATION

LIQUOR ADRENALINAE HYDROCHLORIDI A 1 in 1,000 solution of adrenaline

Dose 2–8 min., 0·1–0·5 mil.—by injection

ACTION

Adrenaline has no action when taken by the mouth It is sympathomimetic—that is it produces the same effects as stimulation of the sympathetic nerves. Its actions may be summarised as follows

1 It accelerates the heart and increases the force of its contractions

2 It has a marked vaso-constrictor action on the arterioles, with the sole exception of the coronary arteries which dilate As a result there is a considerable rise in blood pressure

3 The bronchial muscles are relaxed the pupil dilates and erection of hairs occurs.

4 Peristalsis is inhibited the pyloric and ileo-colic sphincters and sphincter vesicæ are contracted and there is relaxation of the fundus of the bladder

5 It stimulates the secretion of saliva and of tears. The sweat glands are unaffected.

6 It causes the conversion of glycogen in the liver into glucose producing hyperglycæmia and glycosuria.

7 It inhibits the uterus in pregnant women.

These actions are due to stimulation of the sympathetic myoneural junctions. The action of

adrenaline is a very *transient one* due to its being fixed by the body tissues.

Toxic effects occur in some people—e.g anxiety palpitations rapid pulse tremors, vertigo etc

Extractum Suprarenalis Corticis (B.P C) (Cortin, Eucortone)

This is an extract of adrenal cortex. It is not official.

It is not known what action the cortical hormone has in the normal animal It is however essential to life and it appears to play an important part in the metabolism of sodium chloride and water It is used in the treatment of Addison s disease in which the adrenals are destroyed by tuberculosis. The active principle of suprarenal cortex has been synthesised It is desoxycorticosterone acetate and it may be used instead of the extract.

EPHEDRINE

Ephedrina.

Dose ¼–1½ gr 0·016–0·1 G

Ephedrinæ Hydrochloridum.

The hydrochloride of ephedrine an alkaloid derived from the Chinese plant Ma Huang (*Ephedra*) It is also prepared synthetically

Dose ¼–1½ gr 0·016–0·1 G

ACTION

Chemically ephedrine is related to adrenaline to whose actions it closely approximates it being like adrenalin sympathomimetic It differs from the latter in being more stable in solution it is moreover less intense though more prolonged in its action. Furthermore it is not destroyed in the alimentary canal and thus has the great advantage of being effective when taken by the mouth

Ephedrine is valuable as a broncho-dilator and is employed in the prevention and treatment of asthma. It produces a prolonged rise of blood pressure asso-

ciated with quickening of the pulse Apart from its sympathomimetic action ephedrine stimulates the central nervous system Regular use of the drug causes insomnia and headache This action is made use of in narcolepsy Large doses of ephedrine have a depressant action on the heart Sprays containing ephedrine are widely used to produce vaso-constriction of the nasal mucosa

Amphetamina (Benzedrine)

Amphetaminae Sulphas (Benzedrine Sulphate)

Dose $\frac{1}{24}$–$\frac{1}{6}$ gr 0·0025–0·01 G

ACTION

Neither of the above preparations is official Amphetamine is a synthetic drug allied to ephedrine but it is a simpler compound It resembles it in its vaso-constrictor action, and as it is volatile it is used as a nasal inhalant

It has a much more powerful stimulant action on the central nervous system causing prolonged wakefulness increased mental activity and euphoria When taken in excess it may give rise to cardio-vascular collapse and convulsions It has also been known to cause aplastic anæmia. The drug is employed in the treatment of narcolepsy a condition in which the patient falls asleep spontaneously at frequent intervals

THYROID GLAND

Thyroideum (Dry Thyroid)

A powder prepared from the fresh healthy thyroid gland of the sheep Contains 0·1% of iodine in combination as thyroxin

Dose $\frac{1}{2}$–5 gr 0·03–0·3 G

Thyroxinsodium

The sodium salt of thyroxin the active principle of the thyroid gland It contains 61–65% of iodine

Dose $\frac{1}{600}$–$\frac{1}{60}$ gr 0·1–1 mg

Iodine is an important constituent of the thyroxin molecule

ACTION

Continuous administration of thyroxin causes a marked rise in the basal metabolic rate due to an increase of metabolism of fats and carbohydrate Liver glycogen is converted into glucose and hyper glycæmia and glycosuria is common There is a considerable loss of weight often associated with irritability restlessness, tachycardia muscular tremors and twitchings

The administration of thyroid in large doses has very much the same effect. A marked loss of weight occurs, and palpitation muscular tremors, dilatation of skin vessels, diaphoresis and vomiting and diarrhœa are frequently met with Neither thyroxin nor thyroid gives rise to exophthalmos

Iodine is an essential constituent of the thyroxin molecule though the body requires only very minute quantities If the intake of iodine is deficient as in certain districts, where the soil and water contain little of the element a general enlargement of the thyroid (goitre) may result

PITUITARY GLAND

Extractum Pituitarii Liquidum (Pituitrin)

An extract from the posterior lobe of the pituitary body

Dose By subcutaneous injection 2–5 units (0·2–0·5 mil)

ACTION

Pituitary extract has no effect when given by the mouth. There are two chief active principles in pituitary extract—namely

1 *Oxytocin* This causes the uterus to contract the site of action being the muscle itself The action occurs in the non pregnant as well as the pregnant uterus, being much stronger in the latter however

2 *Vasopressin* This produces contraction of plain muscle generally but especially that of the arterioles resulting in vaso-constriction and a rise in blood pressure It also causes powerful contractions of the intestinal muscle

There is contraction of the bronchial and intestinal muscle. All the above actions are on the muscle itself

Vasopressin also produces a diuretic action on the anæsthetised animal, and an antidiuretic action in normal animals and men it causes a delay in the increase of urinary secretion following the ingestion of a large volume of water In the disease diabetes insipidus it greatly diminishes the excessive excretion of urine Vasopressin increases the flow of milk owing to stimulation of plain muscle in the breast Hyperglycæmia and glycosuria also follow an injection of pituitary extract

Anterior Pituitary Hormones

The more defined hormones of the anterior pituitary are as follows

(*a*) **Growth Hormone** (Antuitrin C)

Excessive secretion of this hormone causes gigantism in children and acromegaly in adults. It has no therapeutic effect in cases of pituitary infantilism probably because it is not possible to give sufficiently large doses.

(*b*) **Gonadotropic Hormone** (Antuitrin S)

It is believed that there are two gonadotropic hormones secreted by the anterior pituitary one which is responsible for the ripening of the ovarian follicles the other bringing about the development of the corpus luteum In the male the gonadotropic hormone is responsible for the development of the testicles and the descent into the scrotum

No effective extract of this hormone has been isolated from the pituitary but similar hormones (anterior pituitary like) are found in the urine of pregnant women and the serum of pregnant mares

The former is the basis of the Zondek Aschheim test for pregnancy

The gonadotropic hormones are only effective when given by injection They are employed in various gynæcological conditions and also in delayed descent of the testicles.

(c) **Lactogenic Hormone** (Prolactin)

The lactogenic hormone of the pituitary is responsible for the initiation and continuation of lactation During pregnancy the secretion of prolactin by the anterior pituitary is inhibited by the presence of large amounts of œstradiol in the blood This falls abruptly after delivery and permits of the formation of prolactin.

Other hormones secreted by the anterior pituitary are the thyrotropic hormone which stimulates the activity of the thyroid and the diabetogenic hormone which has a similar action to that of the pancreatic islet tissue in the regulation of carbohydrate metabolism Hyperpituitarism causes hyperglycæmia and glycosuria.

N.B —There is no official B.P preparation of the anterior pituitary

THE PANCREAS

Insulinum (Insulin)

The internal secretion of the pancreas, formed by the islets of *Langerhans*

Dose 5–100 units by subcutaneous injection

ACTION

Insulin is essential for the proper metabolism of carbohydrate It enables the liver to store glucose, the end product of ingested carbohydrate after converting it into glycogen. It also enables the tissues to utilise the glucose circulating in the blood

An injection of glucose in a normal as well as a diabetic individual causes a profound fall in the

blood-sugar When it falls below a certain level (60– omg per 100 c c) the following symptoms occur Hot flushes sweating, a feeling of hunger palpitation and tremulousness. Later coma supervenes sometimes preceded by convulsions. Administration of glucose relieves all symptoms.

In diabetes insulin has the same action as the normal secretion of the pancreas enabling carbohydrate metabolism to proceed normally

It should be noted that insulin has no action when given by the mouth

Protamine Insulinat is a compound of insulin with certain protamines It is absorbed much more slowly than insulin the delayed effect being produced by the addition of a buffer solution containing sodium phosphate The number of daily injections can therefore in some cases be reduced

It is not an official preparation

Protamine insulin is unstable The addition of small amounts of zinc results in a much more stable substance This zinc protamine insulin has a similar prolonged action and is now the preparation used when a delayed action insulin is required

THE SEX HORMONES

THE OVARY

The ovary secretes two hormones one produced by the corpus luteum progesterone the other by the follicles œstrogen

Progesterone.

Dose 1–10 mgs by intramuscular injection This is not official.

This hormone may be prepared from the corpus luteum of sows or synthetically

In women this hormone carries on the changes in the uterine endometrium started by œstrin and is also responsible for preparing the breasts for lacta

tion Deficient formation of progesterone may be responsible for abortion in the early months of pregnancy

Œstrogens.

Natural œstrogen is produced by the ovary when the *follicle* ripens. It is now known as œstradiol. A number of synthetic œstrogens are now available—*e g* Stilbœstrol Stilbœstrol dipropionate

Œstrin causes the changes known as œstrus in animals in women it brings about the changes in the uterine endometrium in the early part of men struation the further changes being due to progesterone

Stilbœstrol (Diethylstilbœstrol)

Dose $\frac{1}{120}$–$\frac{1}{30}$ gr 0·0005–0·002 G

ACTION

Stilbœstrol is a synthetic compound with an action similar to that of the naturally occurring œstrogens. It is highly active by mouth, but it is also given parenterally

It is used to relieve the symptoms of the menopause both natural and artificial, and is also em ployed in atrophic vaginitis and in vulvo-vaginitis in children Stilbœstrol inhibits the production of prolactin by the pituitary and thus abolishes lactation

THE TESTICLE

Testosterone Propionate.

Dose 5–25 mgs. by *intramuscular injection* It is not official.

The male sex hormone can now be prepared synthetically It is allied chemically to progesterone and corticosterone It is used therapeutically as a replacement of the natural hormone in male castrates.

It is responsible for the development of the male secondary sexual characteristics.

PARATHYROID GLAND

Extractum Parathyroidei (Parathormone)

Dose 0–40 units by injection

This is not an official preparation

The chemical constitution of the active principle is unknown

Parathyroid extract raises the serum calcium and increases relatively and absolutely the amount of ionised calcium in the blood It is used in the treatment of tetany a condition of hyperexcitability of the neuromuscular system due to a reduction in the total amount of ionised calcium in the blood serum

DIGESTIVE FERMENTS

PEPSIN

Pepsinum.

An enzyme obtained from the fresh and healthy stomach of a pig, sheep or calf It contains a proteolytic enzyme

Dose 5–10 gr., 0·3–0·6 G

ACTION

In the presence of acid it converts proteins into peptones.

PANCREATIN

Pancreatinum.

A preparation of the pancreas, containing the enzymes trypsin amylase and lipase

Dose 4–10 gr., 0·2–0·6 G

ACTION

In an alkaline medium it digests proteins, fats and carbohydrates. It is frequently used for the predigestion of foods before being taken.

OX-BILE

Extractum Fellis Bovini (Purified Ox Bile)

Extract of ox bile is prepared from fresh ox bile, and contains the bile salts and pigments, free from mucus.

Dose 5–15 gr 0 3–1 G

ACTION

Ox bile is a cholagogue, for it stimulates the secretion of bile. It also stimulates intestinal peristalsis and is used in *chronic constipation*

VACCINES

The administration of vaccines is one method of producing immunity in an individual. Immunity is the power of an animal to resist infection by parasitic microbes or the toxins produced by them.

Some individuals have a natural immunity present at birth to one or other infection. Acquired immunity may be developed in the course of recovery from an infection. This may be permanent, as in smallpox, or transient as in influenza. Acquired immunity may also be developed artificially in a number of ways

1 By inoculation of a virus whose virulence has been attenuated—*e g*, rabies and smallpox. (Cow pox is an attenuated form of smallpox.)

2 By inoculation of organisms killed by heat or antiseptics. Most vaccines are of this type—*e g* typhoid vaccine

3 By inoculation of toxins treated by one or other method so as to render them harmless—*e g* diphtheria toxoid.

Vaccines are of more value in the prevention than the cure of disease. They may be either (*a*) Autogenous—*i e* those prepared from cultures of organisms obtained from the patient. These are employed in the treatment of infections. (*b*) Stock vaccines,

prepared from stock cultures of organisms. Prophylactic vaccines are of this type.

The following are the official vaccines:

Vaccinum Typho-Paratyphosum (T.A.B.)

This is a sterile suspension of the micro-organisms *B. typhosus*, *B. paratyphosus* A and *B. paratyphosus* B which have been killed. It contains in 15 min. (1 mil) 1 000 million *B. typhosus*, 500 million *B. paratyphosus* A, and 500 million *B. paratyphosus* B.

Dose.—By subcutaneous injection, [illegible] min., 0·5 mil (first dose), 15 min., 1·0 mil (second dose after seven to ten days' interval).

Vaccinum Vaccinia (Smallpox Vaccine)

This is a preparation of the substance obtained from the vesicles produced by inoculation of vaccinia virus on to the skin of healthy animals.

Dose.—By scarification, 1 min., 0·06 mil.

Tuberculinum Pristinum (Koch's Old Tuberculin)

This is a concentrated filtrate from a fluid medium on which the *Bacillus tuberculosis* has been grown.

Dose.—*Diagnostic*, [illegible] min., 0·001–0·005 mil by intracutaneous injection. *Therapeutic*, [illegible] min., 0·000001 mil, gradually increased by subcutaneous injection.

Tuberculin is nowadays used very little in the treatment of tuberculosis. It is liable to produce dangerous general reactions as well as unpleasant local ones. It is, however, used by some people in the treatment of lupus and genito-urinary tuberculosis. The Mantoux is the diagnostic tuberculin test in common use to-day: 0·1 mil of a 1 in 10 000 or 1 in 1 000 dilution of old tuberculin is injected into the skin. A positive result is indicated by the appearance of a slightly raised erythematous patch within twenty-four to forty-eight hours.

Toxinum Diphthericum Detoxicatum.

Diphtheria prophylactic may occur in the following and other forms

(*a*) Diphtheria toxin antitoxin mixture prepared by adding diphtheria antitoxin to a filtrate of a culture on nutrient broth of *C diphtheriæ*

(*b*) Diphtheria toxoid or anatoxin, prepared by treating the filtrate with formaldehyde.

(*c*) Diphtheria toxoid antitoxin mixture prepared by treating the filtrate with formaldehyde and adding a small quantity of diphtheria antitoxin.

(*d*) Diphtheria toxin-antitoxin floccules prepared by adding diphtheria antitoxin to the filtrate in the proportion necessary to produce a suitable flocculation separating the floccules and washing and suspending them in a physiological solution of sodium chloride.

(*e*) Diphtheria toxoid antitoxin floccules, prepared by treating the filtrate with formaldehyde and proceeding as for toxin antitoxin floccules.

(*f*) Alum precipitated toxoid prepared by treating the filtrate with formaldehyde adding alum in the proportion necessary to produce a suitable precipitate separating the precipitate and washing and suspending it in physiological solution of sodium chloride.

Dose By subcutaneous injection, the volume indicated on the label as the dose, on two or three occasions at intervals of two to four weeks.

Toxinum Tetanicum Detoxicatum (Tetanus Toxoid)

Tetanus toxoid is tetanus toxin the sterile filtrate of a culture of *Clostridium tetani* the specific toxicity of which has been completely removed by the action of chemical substances in such a manner that it retains efficient properties as an immunising antigen Tetanus toxoid may occur in the following forms

(*a*) Tetanus toxoid in simple solution. This is prepared by treating the filtrate with formaldehyde

(*b*) Alum precipitated toxoid This is prepared by adding alum to tetanus toxoid in simple solution

Doses By subcutaneous or intramuscular injection, 8–15 min., 0·5–1 mil

ANTITOXIC SERA

Toxins are substances secreted by certain bacteria and can be separated from them Such toxins are exotoxins and are only produced by certain bacteria —*e.g.*, the diphtheria bacillus tetanus bacillus. Snake venoms resemble bacterial toxins in many respects and antitoxins have been prepared against many of them

By repeated injections of sub-lethal doses of toxin into an animal—*e g* a horse—a high degree of immunity to large ordinarily lethal doses of toxin is produced This immunity is due to the formation of antitoxins in the serum of the horse The animal is bled and the serum separated and concentrated The standardised serum is known as antitoxic serum

Antitoxic sera may be used either prophylactically or therapeutically In the former a small dose of serum is given to an individual who has been exposed to an infectious disease—*e g* diphtheria If given early enough in the incubation period the serum will protect the individual from contracting the disease or if he does contract it he will have a mild attack. This kind of immunity is of the passive type and lasts only a few weeks. When employed therapeutically the serum must be given in large doses as soon after the onset of the infection as possible

The following are the official antitoxic sera

Antitoxinum Diphthericum (Diphtheria Antitoxin)

Dose By intramuscular or intravenous injection—*Prophylactic* 500–1 000 units *Therapeutic* 10 000–20 000 units

Antitoxinum Tetanicum (Tetanus Antitoxin)

Dose By intramuscular or intravenous injection—*Prophylactic* 1 000–2 000 units. *Therapeutic* 20,000–40 000 units.

Antitoxinum Œdematiens (Gas-Gangrene Antitoxin Œdematiens)

This toxin neutralises the toxin of *Clostridium oedematiens*

Dose—Prophylactic 20 000 units by injection. *Therapeutic* 50,000–100 000 units by injection.

Antitoxinum Vibriosepticum (Gas-Gangrene Antitoxin Vibrion Septique)

This antitoxin neutralises the toxin of *Vibrion septique*

Dose—Prophylactic 5 000 units, by injection. *Therapeutic* 10 000–20 000 units, by injection.

Antitoxinum Welchicum (Gas-Gangrene Antitoxin Perfringens)

This antitoxin neutralises the toxin of *Bacillus perfringens*

Dose—Prophylactic 4 000 units by injection. *Therapeutic* 10,000–20 000 units, by intravenous injection.

Serum Antidysentericum (Shiga)

This serum has a specific neutralising effect in persons infected with *B dysenteriæ* (Shiga)

Dose 4,000–10 000 units, by injection.

Serum Antipneumococcicum I.

Serum Antipneumococcicum II

These sera have a specific neutralising action in infections with Pneumococcus Type I and Pneumococcus Type II respectively

Dose 50 000–150 000 units by intravenous injection

Antitoxinum Staphylococcicum

This antitoxin neutralises the toxin of certain strains of staphylococcus.

Dose 5 000–20 000 units by injection

N B —The antipneumococcic sera the antidysenteric sera, and the staphylococcus antitoxin are prepared by injected graded doses of the appropriate bacteria into horses, the serum afterwards being separated from the blood and concentrated

PART II

LISTS OF PREPARATIONS ARRANGED IN ORDER OF ASCENDING MAGNITUDE OF DOSES

ACIDS

Preparation.	Imperial Dose.	Metric Dose.	Strength.
Acidum Hydrocyanicum Dilutum	2–5 min	0·12–0·3 mil	2%
Salicylicum	5–10 gr	0·3–0·6 G	99·5%
Tannicum			—
Benzoicum	5–15 gr	0·3–1 G	99·5%
Boricum ..			99·5%
Hypophosphoricum Dilutum	5–15 min.	0·3–1 mil.	10%
Oleicum ..			—
Lacticum	5–20 min	0·3–1·2 mil	87·5%
Citricum	5–30 gr	0·3–2 G	99·5%
Tartaricum ...			99·5%
Mandelicum	15–45 gr	1–30 mils	—
Hydrochloricum Dilutum	5–60 min.	0·3–4 mils	10%
Phosphoricum Dilutum			10%
Sulphuricum Dilutum			10%
Hydrobromicum Dilutum	15–60 min	1–4 mils	10%
Aceticum Dilutum	30–60 min	2–4 mils	6%
Aceticum	—	—	33%
Aceticum Glaciale	—	—	99%
Hydrochloricum ...	—	—	32%
Nitricum	—	—	70%
Phosphoricum	—	—	89%
Sulphuricum	—	—	95%
Trichloraceticum	—	—	98%
Ricinoleicum	—	—	—

AQUÆ

Aquæ are aqueous solutions prepared by distilling the drug with water

Preparation.	Imperial Dose	Metric Dose	Strength.
Aqua Anethi Concentrata	5-15 min	0·3-1 mil	—
" Cinnamomi Concentrata	"		—
" Menthæ Piperitæ Concentrata	"		—
" Anethi Destillata	½-1 fl oz	15-30 mils	5%
" Camphoræ			0·1
" Chloroformi		"	0·25%
" Cinnamomi Destillata	"		5
" Menthæ Piperitæ Destillata			0·07

CONFECTIONS

Confections are powders made into a paste with sugar or honey

Preparation.	Imperial Dose.	Metric Dose	Strength.
Confectio Sennæ	60-120 gr	4-8 G	10%
" Sulphuris	"		45%

EMULSIONS

An emulsion consists of two liquid phases, one of which is subdivided finely and mixed with the other the system being made permanent by an emulsifying agent

Preparation.	Imperial Dose.	Metric Dose	Strength.
Emulsio Chloroformi	5-30 min.	0·3-2 mils	5%
" Menthæ Piperitæ			10%
" Olei Vitaminati	30-60 min.	2-4 mils	50%
" Olei Morrhuæ			50%

EXTRACTS

These are concentrated preparations made by dissolving the soluble matter of vegetable or animal tissues in water alcohol, or other suitable solvent. The liquid thus obtained is concentrated by evaporation to make a liquid extract or evaporated to dryness or nearly to dryness to form a solid extract.

(A) DRY

Preparation.	Imperial Dose.	Metric Dose.	Strength.
Extractum Belladonnae Siccum	¼–1 gr	0·015–0·06 G	1%
Colchici Siccum			1% Colchicine
Hyoscyami Siccum			0·3%
Nucis Vomicae Siccum			5% Strychnine
Opii Siccum ..			20% Opium
Stramonii Siccum			1%
Cascara Sagradae Siccum	2–8 gr	0·12–0·5 G	—
Colocynthidis Compositum			4%
Cinchonae			10%
Gentianae			—
Fellis Bovinae	5–15 gr	0·3–1 G	—
Krameriae Siccum			—
Glycerrhizae ..	10–30 gr	0·6–2 G	—
Hepatis Siccum	Equivalent of ½ lb. (225 G) of Raw Liver		

(B) LIQUID

Preparation		Imperial Dose	Metric Dose	Strength
Extractum	Belladonnae Liquidum	¼–1 min	0·015–0·06 mil	0·75
	Ipecacuanhae Liquidum (Expectorant)	½–2 min	0·03–0·12 mil	2 %
	Stramonii Liquidum	1½–3 min	0·1–0·2 mil	0·25
	Quillaiae Liquidum	1½–3 min	0·1–0·2 mil	—
	Scillae Liquidum	1½–3 min	0·1–0·2 mil	—
	Nucis Vomicae Liquidum	1–3 min	0·06–0·2 mil	1·5 Strychnine
	Colchici Liquidum	2–5 min	0·12–0·3 mil	0·3 % Colchicine
„	Hyoscyami Liquidum	3–6 min	0·2–0·4 mil	0·05%
„	Cinchonae Liquidum	5–15 min	0·3–1 mil	5%
	Senegae Liquidum			—
„	Ergotae Liquidum	10–20 min	0·6–1·2 mil	0·05
	Sennae Liquidum	10–30 min.	0·6–2 mils	—
	Ipecacuanhae Liquidum (Emetic)	„		2 %
	Cascarae Sagradae Liquidum	30–60 min	2–4 mils	—
	Glycyrrhizae Liquidum			—
„	Hamamelidis Liquidum		„	—
	Filicis	45–90 min	3–6 mils	25% Filicin
	Malti c Oleo Morrhuae	60–240 min	4–16 mils	15% Cod liver oil
	Malti c̄ Oleo Vitaminato	60–240 min.	4–16 mils	10 % Vitaminised oil
	Malti	„		—
	Hepatis Liquidum	1 fl oz	30 mils	—
	Pituitarii Liquidum	2–5 units	0·2–0·5 mil	—

EXTRACTS

These are concentrated preparations made by dissolving the soluble matter of vegetable or animal tissues in water alcohol or other suitable solvent. The liquid thus obtained is concentrated by evaporation to make a liquid extract or evaporated to dryness or nearly to dryness to form a solid extract.

(A) DRY

Preparation.	Imperial Dose.	Metric Dose.	Strength.
Extractum Belladonnæ Siccum	¼–1 gr	0·015–0·06 G	1%
Colchici Siccum			1% Colchicine
Hyoscyami Siccum			0·3%
Nucis Vomicæ Siccum	"		5% Strychnine
Opii Siccum			20% Opium
" Stramonii Siccum			1%
Cascaræ Sagradæ Siccum	2–8 gr	0·12–0·5 G	—
" Colycynthidis Compositum			4%
Cinchonæ			10%
Gentianæ			—
Fellis Bovinæ	5–15 gr	0·3–1 G	—
Krameriæ Siccum			—
" Glycerrhizæ	10–30 gr	0·6–2 G	—
Hepatis Siccum	Equivalent of ½ lb (225 G) of Raw Liver		

(D) LIQUID

Preparation		Imperial Dose	Metric Dose	Strength
Extractum	Belladonnae Liquidum	¼–1 min	0·015–0·06 mil	0· 5
,,	Ipecacuanhae Liquidum (Expectorant)	½–2 min	0·03–0·12 mil	2%
	Stramonii Liquidum	1½–3 min	0·1–0·2 mil	0·25
	Quillaiae Liquidum	1½–3 min	0·1–0·2 mil	—
	Scillae Liquidum	1½–3 min	0·1–0·2 mil	—
	Nucis Vomicae Liquidum	1–3 min	0·06–0·2 mil	1·5 Strychnine
	Colchici Liquidum	2–5 min	0·12–0·3 mil	0·3 Colchicine
	Hyoscyami Liquidum	3–6 min	0·2–0·4 mil	0·05*
	Cinchonae Liquidum	5–15 min	0·3–1 mil	5*
	Senegae Liquidum	,,		—
	Ergotae Liquidum	10–20 min	0·6–1·2 mil	0·05*
,,	Sennae Liquidum	10–30 min	0·6–2 mils	—
	Ipecacuanhae Liquidum (Emetic)			2*%
,,	Cascarae Sagradae Liquidum	30–60 min	2–4 mils	—
,,	Glycyrrhizae Liquidum			—
	Hamamelidis Liquidum	,,		—
,,	Filicis	45–90 min	3–6 mils	25% Filicin
,,	Malti cum Oleo Morrhuae	60–240 min.	4–16 mils	15% Cod liver oil
,,	Malti c̄ Oleo Vitaminato	60–240 min	4–16 mils	10% Vitaminised oil
	Malti ,,			—
	Hepatis Liquidum	1 fl oz	30 mils	—
	Pituitarii Liquidum	2–5 units	0·2–0·5 mil	—

GLYCERINS

These are solutions of drugs in glycerin They are liquid preparations except G Amyli, which is a jelly

Preparation.	Imperial Dose	Metric Dose	Strength.
Glycerinum Phenolis	5–15 min.	0·3–1 mil	16%
Acidi Borici	10–30 min	0·6–2 mils	30%
,, Acidi Tannici			15%
Aluminis	30–60 min.	2–4 mils	13%
Boracis			12%
Amyli	—	—	5·5%

INFUSIONS

There are two types of infusions The concentrated infusions are made by treating the substances to be extracted with alcohol and water They are relatively stable. The fresh infusions are made by treating the substances with cold or boiling distilled water These are unstable and should be used within twelve hours of preparation.

Preparation.	Imperial Dose.	Metric Dose.	Strength.
Infusum Aurantii Concentratum	30–60 min.	2–4 mils	—
Calumbæ Concentratum			—
Caryophylli Concentratum			—
Gentianæ Compositum Concentratum			—
Quassiæ Concentratum			—
Senegæ Concentratum			—
Sennæ Concentratum			—
Buchu Concentratum	60–120 min	4–8 mils	—
Digitalis Recens	90–300 min	6–20 mils	—

INFUSIONS—Continued

Preparation	Imperial Dose	Metric Dose	Strength
Infusum Aurantii Recens	½–1 fl oz	15–30 mils	5
" Calumbae Recens			5
" Caryophylli Recens			2·5
" Gentianae Compositum Recens		"	1·25
" Quassiae Recens			1%
" Senegae Recens			5
" Buchu Recens	1–2 fl oz	30–60 mils	5
" Sennae Recens	½–2 fl oz	15–60 mil	10

INJECTIONS

Preparation	Imperial Dose	Metric Dose	Strength
Injectio Hydrargyri	5–10 min	0·3–0·6 mil	App 10
" Leptazoli	8–15 min	0·5–1 mil	10%
" Bismuthi	8–15 min	0·5–1 mil	20
" Bismuthi Salicylatis	10–20 min	0·6–1·2 mil	10 %
" Hydrargyri Subchloridi	10–20 min.	0·6–1·2 mil	App 5%
" Mersalyli	8–30 min	0·5–2 mils	10%
" Bismuthi Oxychloridi	15–30 min	1–2 mils	10%
" Ferri	15–30 min.	1–2 mils	7%
" Nikethamidi	15–60 min.	1–4 mils	25%
" Quininae et Urethani	8–75 min.	0·5–5 mils	12·5
" Sodii Morrhuatis	Intravenously		5
" Calcii Gluconatis	150–300 min.	10–20 mils	—
" Sodii Chloridi et Acaciae	—	—	0·9% NaCl 6% Acacia
" Procainae et Adrenalinae Fortis	—	—	—
" Procainae et Adrenalinae Mitis	—	—	—

LAMELLÆ

These are small discs made with gelatin or glycerin They are dropped into the eye.

Preparation	Strength.
Lamella Atropinæ	Each contains $\frac{1}{5000}$ gr 0·013 mg. Atropine Sulphate
Physostigminæ	Each contains $\frac{1}{1000}$ gr 0·065 mg Physostigmine Salicylate.
Homatropinæ	Each contains $\frac{1}{100}$ gr 0·65 mg Homatropine Hydrobromide.
Cocainæ ..	Each contains $\frac{1}{50}$ gr., 1·3 mg. Cocaine Hydrochloride.

LINIMENTS

Preparations for external application they have an oily soapy or alcoholic basis.

Preparation	Strength.
Linimentum Aconiti ..	50% Aconite
Belladonnæ	0·375% *Alkaloids*
Camphoræ	20% Camphor
Camphoræ Ammoniatum	12·5% Camphor
,, Saponis	8% Soft Soap 4% *Camphor*
Terebinthinæ	65% Oil of Turpentine 5% Camphor
Terebinthinæ Aceticum	44·5% Oil of Turpentine 44·5% of Camphor

LIQUORS

Liquors are solutions of chemical substances in water or alcohol

(A) ONE PER CENT LIQUORS

Preparation.	Imperial Dose	Metric Dose	Strength.
Liquor Glycerylis Trinitratis	½–2 min	0·03–0·12 mil	—
Arsenicalis	2–8 min	0·12–0·5 mil	—
Strychninæ Hydrochloridi	3–12 min	0·2–0·8 mil	—
„ Arseni et Hydrargyri Iodidi	5–15 min	0·3–1 mil	—
„ Morphinæ Hydrochloridi	5–30 min.	0·3–2 mils	—

(B) OTHER LIQUORS

Preparation.	Imperial Dose	Metric Dose	Strength.
Liquor Vitamini D Concentratus	½–3 min	0·03–0·2 mil	—
„ Vitamini A Concentratus	1–5 min	0·06–0·3 mil	—
Vitaminorum A et D Concentratus		„	—
Adrenalini Hydrochloridi	2–8 min.	0·12–0·5 mil	0·1%
Æthylis Nitritis Concentratus	2–8 min.	0·12–0·5 mil.	17–20%
Calciferolis			
Prophylactic	5–10 min	0·3–0·6 mil	—
Therapeutic	10–15 min.	0·6–1 mil	—
„ Ferri Perchloridi	5–15 min	0·3–1 mil	15%
Iodi Simplex	3–15 min	0·2–1 mil	9% Iodine
Iodi Aquosus	5–15 min	0·6–1 mil	5% Iodine 10% Pot. Iod
Ammoniæ Dilutus	10–20 min.	0·6–1·2 mil	10%
Iodi Mitis	5–30 min	0·3–2 mils	2·5% Iodine 1·5% Pot. Iod

(B) OTHER LIQUORS—*Continued*

Preparation.	Imperial Dose.	Metric Dose.	Strength.
Liquor Ammonii Acetatis Fortis	15–60 min.	1–4 mils	57·5%
Ammoniæ Aromaticus	15–60 min.	1–4 mils	—
Hydrargyri Perchloridi	30–60 min	2–4 mils	0·1%
Quininæ Ammoniatus		"	2% Quinine 1% Ammonia
Hydrogenii Peroxidi	30–120 min.	2–8 mils	3%
" Ammoniæ Acetatis Dilutus	½–1 fl. oz	8–30 mils	7·2%
" Magnesii Bicarbonatis	1–2 fl. oz.	30–60 mils	2·5%
" Calcii Hydroxidi	1–4 fl. oz.	30–120 mils	0·15%

(C) LIQUORS NOT USED INTERNALLY

Preparation.	Strength.
Liquor Ammoniæ Fortis ...	32·5%
" Chloroxylenolis	5%
Cresolis Saponatus ...	50% Cresol
Epispasticus	0·4% Cantharidin
Formaldehydi ...	37–41%
Iodi Fortis	10% Iodine 6% Pot. Iod.
Sodii Hydroxidi ...	5%
Picis Carbonis	20%
" Plumbi Subacetatis Fortis	25%
Plumbi Subacetatis Dilutus ...	1·25% of the strong solution
" Potassii Hydroxidi	5%

MIXTURES

Preparation	Imperial Dose	Metric Dose	Strength.
Mistura Magnesii Hydroxidi	60-240 min.	4-16 mils	—
Sennæ Composita	1-2 fl. oz	30-60 mils	—

MUCILAGES

These are aqueous viscid solutions of gum used for suspending insoluble substances.

Preparation.	Imperial Dose	Metric Dose	Strength
Mucilago Acaciæ	60-120 min	4-16 mils	40 %
Tragacanthæ			1·25 %

OCULENTA

These are eye ointments, consisting of a mixture of the drug with soft paraffin and wool fat.

Preparation	Strength.
Oculentum Atropinæ	0·25% Atropine Sulphate
Atropinæ cum Hydrargyri Oxido	0·125 % Atropine Sulphate 1 Yellow Mercuric Oxide
Cocainæ	0·25 % Cocaine Hydrochloride
Hydrargyri Oxidi	1 Yellow Mercuric Oxide
Hyoscinæ	0·125 % Hyoscine Hydrobromide
Iodoformi	4 % Iodoform
Physostigminæ	0·125 Physostigmine Salicylate

OILS

(A) FIXED OILS

Preparation	Imperial Dose.	Metric Dose.	Strength.
Oleum Amygdalæ Volatile Purificatum	¼–1 min.	0·016–0·06 mil	—
Hippoglossi Vitaminatum	1–5 min	0·06–0·3 mil	—
Prophylactic	15–30 min.	1–2 mils	—
Therapeutic	45–90 min.	3–6 mils	—
Morrhuæ	30–120 min.	2–8 mils	—
Ricini	60–240 min.	4–16 mils	—
Amygdalæ	½–1 fl. oz.	15–30 mils	—
Arachis			—
Gossypii Seminis	"		—
Lini			—
Olivæ		"	—
Sesami			—
Theobromatis	—	—	—

(B) VOLATILE OILS

Preparation.	Imperial Dose.	Metric Dose.	Strength
Oleum Anethi	1–3 min.	0·06–0·2 mil	—
Anisi			—
Cajuputi			—
Carui	"		—
Caryophylli	"		—
Cinnamomi			—
Coriandri		"	—
Eucalypti			—
Lavandulæ	"		—
Limonis			—
" Menthæ Piperitæ			—
Myristicæ			—
Rosmarini			—
Terebinthinæ	3–10 min.	0·2–0·6 mil	—
Santali	5–15 min.	0·3–1 mil	—
" Australiensis			—
Abietis	—	—	—
Cadinum	—	—	—

(C) OTHER OILS

Preparation.	Imperial Dose.	Metric Dose	Strength.
Oleum Chenopodii	3 15 min.	0·2–1 mil	—
„ Hydnocarpi	5–60 min	0·3 4 mils	—
Hydnocarpi Ethylicum	„	„	—

OINTMENTS

Ointments are preparations having a fatty basis They are used externally

Preparation	Strength
Unguentum Acidi Borici	10
Acidi Salicylici	2
Acidi Tannici	20
Alcoholium Lanæ	6
„ Aquosum	24% Distilled Water
Capsici	Approx 0
Chrysarobini	4
Dithranolis	0·1
Hamamelidis	10
Hydrargyri	30
Hydrargyri Ammoniati	5%
Hydrargyri Compositum ..	40 Mercury Ointment 12 Camphor
Hydrargyri Dilutum ..	33% Mercury Ointment
Hydrargyri Nitratis Dilutum	20% strong ointment of mercuric nitrate
Hydrargyri Nitratis Forte	6·7% Mercury
„ Hydrargyri Oleati ..	25%
Hydrargyri Subchloridi	20%
„ Paraffini	8% Hard Paraffin, 90% Soft Paraffin
Phenolis	3%
Simplex ..	10% Hard Paraffin 85% Soft Paraffin
Sulphuris ..	10% Sublimed Sulphur
Zinci Oleatis	3% Zinc Sulphate 9 Hard Soap
Zinci Oxidi Anhydrosum ..	15%

SUPPOSITORIES

Bodies of a conical shape for introduction into the rectum or vagina. The basis is oil of theobroma (cacao butter) except Suppositorium Glycerini.

Preparation	Strength.
Suppositorium Glycerini	70% Glycerin in Gelatin
Acidi Tannici	3 gr (0·2 G) Tannic Acid
Belladonnæ	1/75 gr (0·001 G) total Alkaloids
Iodoformi	3 gr (0·2 G) Iodoform
Morphinæ	1/4 gr (0·015 G) Morphine Hydro-
Phenolis	1 gr (0·06 G) Phenol [chloride
Plumbi cum Opio	1 gr (0·06 G) Opium, 3 gr (0·2 G) Lead Acetate

SYRUPS

Syrups are saturated or nearly saturated solutions of sugar containing flavouring or therapeutically active substances.

Preparation.	Imperial Dose.	Metric Dose.	Strength
Syrupus Ferri Phosphatis cum Quinina et Strychnina	30–60 min.	2–4 mils	1·8 % of Ferrous Phosphate 1·09 % Quinine 0·025% Strychnine
Ferri Phosphatis cum Strychnina			
Scillæ			45 % of Squill
,, Aurantii ..	30–120 min.	2–8 mils.	12 5%
Ferri Iodidi			5%
Ferri Phosphatis Compositus	,,	,,	0·9 % of Ferrous Phosphate 1 4 % of Tricalcium Phosphate
Limonis			6%
Pruni Serotinæ ..	,,	,,	15%
Sennæ ..			25%
Tolutanus			2·5%
Zingiberis	,,		5%

TINCTURES

Tinctures are alcoholic solutions of drugs or active principles. They are prepared either by maceration or percolation

Preparation	Imperial Dose	Metric Dose	Strength.
Tinctura Strophanthi	2-5 min.	0·12-0·3 mil	—
Zingiberis Fortis	5 10 min	0·3-0·6 mil	50
Capsici	5 15 min	0·3-1 mil	5%
Cocci (Cochineal)			10 „
Colchici			0·3% Colchicine
„ Digitalis			—
(Single Doses 30-90 min. 2-6 mils)			
Lobeliæ Ætherea	5 15 min	0·3 1 mil	20
Belladonnæ	5 30 min.	0·3 2 mils	0·03 „ Alkaloids
Opii			1 Morphine
Scillæ			10 „
„ Stramonii			0·025% Alkaloids
Ipecacuanhæ	10-30 min.	0·6-2 mils	0·1% Alkaloids
(Emetic Doses ½-1 fl. oz. 15-30 mils)			
„ Nucis Vomicæ	10-30 min	0·6-2 mils	0·125% Strychnine
Asafœtidæ	30-60 min	2-4 mils	20%
Aurantii		„	25 „
Benzoini Composita			10% Benzoin
„ Calumbæ			10
Cardamomi Composita	„		1 4% Cardamom 1 4% Caraway
„ Catechu			16%
Cinchonæ			1 Alkaloids
„ Cinchonæ Composita			0·5% Alkaloids
„ Gentianæ Composita		„	10% Gentian
Hyoscyami		„	0·005% Alkaloids
„ Krameriæ	„	„	20%
„ Limonis		„	25%

TINCTURES—*Continued.*

Preparation	Imperial Dose.	Metric Dose.	Strength.
Tinctura Myrrhæ	30–60 min.	2–4 mils	20%
Opii Camphorata			0·05% Morphine
Quassiæ			10%
Quilliæ			5%
Rhei Composita			10% Rhubarb
Senegæ			20%
Tolutana			10%
Valerianæ Ammoniata		"	20% approx.
Zingiberis Mitis			20%

Note.—The dose of the so-called poisonous tinctures is 5 to 30 minims with the *following exceptions* Tincture of Strophanthus (2–5 min.) Tincture of Colchicum (5–15 min.) Tincture of Lobelia (5–15 min.) and Tincture of Hyoscyamus (30–60 min.)

TROCHISCI

Trochisci are lozenges prepared from a basis of sugar and acacia, to be dissolved in the mouth.

Preparation.	Strength.
Trochiscus Morphinæ et Ipecacuanhæ	$\frac{1}{36}$ gr (0·002 G.) Morphine Hydrochloride, $\frac{1}{12}$ gr (0·006 G.) Ipecacuanha in each
Krameriæ et Cocainæ	$\frac{1}{20}$ gr (0·003 G.) Cocaine Hydrochloride 1 gr (0·06 G). Dry Extract of Krameria in each
Acidi Tannici	$\frac{1}{2}$ gr (0·03 G.) Tannic Acid in each
" Phenolis	$\frac{1}{2}$ gr (0·03 G.) Phenol in each
Bismuthi Compositus	$2\frac{1}{2}$ gr (0·15 G.) Bismuth Carbonate in each
Krameriæ	1 gr (0·06 G.) Dry Extract of Krameria in each

DRUGS ARRANGED ACCORDING TO THEIR PHARMACOLOGICAL AND THERAPEUTIC ACTIONS

(A) DRUGS ACTING ON THE NERVOUS SYSTEM

1 Anæsthetics

(a) *General*

Drugs which produce loss of consciousness with abolishment of reflex action

CHLOROFORM
ETHER.
ETHYLENE.
ETHYL CHLORIDE.
NITROUS OXIDE
PENTOTHAL
HEXOBARBITONE
BROMETHOL.

(b) *Local*

These paralyse sensory nerve endings. Cocaine paralyses nerve trunks when injected in their neighbourhood

COCAINE and its DERIVATIVES
ETHYL CHLORIDE.
PHENOL.
QUININE.
HYDROCYANIC ACID
MENTHOL.
ACONITE.

2 Hypnotics.

Drugs which produce sleep

OPIUM
MORPHINE.
HEROIN
CHLORAL HYDRATE.
CHLORBUTOL.
PARALDEHYDE
SULPHONAL.
METHYLSULPHONAL.
BARBITONE and the BARBITURIC GROUP

BROMIDES.
CARBROMAL.
URETHANE.
ETHYL ALCOHOL.

N.B.—Anæsthetics, Hypnotics and Narcotics comprise the group of cerebral depressants. Narcotics produce sleep deeper than normal; hypnotics in large doses act as narcotics.

3. **Drugs depressing the Motor Cortex.**

BROMIDES.
PHENOBARBITONE.
PHEMITONE.
SODIUM PHENYLHYDANTOIN.

4. **Cerebral Stimulants.**

Drugs which stimulate and excite the cerebrum.

ATROPINE.
HYOSCYAMUS.
HYOSCINE.
STRYCHNINE.
CAFFEINE.
COCAINE.
MORPHINE.
CAMPHOR.

5. **Drugs which stimulate the Autonomic Nervous System.**

ACETYL-CHOLINE.
CARBACHOL.
ADRENALIN.
EPHEDRINE.
PILOCARPINE.
PHYSOSTIGMINE.

6. **Drugs which inhibit the Autonomic Nervous System.**

ATROPINE.
HYOSCYAMUS.
ERGOT.

Ergot acts by inhibiting the action of adrenalin on the tissues.

(B) DRUGS ACTING ON THE PUPIL.

1 Mydriatics.

Drugs which dilate the pupil

(a) *Paralysis of third nerve endings*
ATROPINE and HOMATROPINE
HYOSCYAMINE
HYOSCINE

(b) *Stimulation of sympathetic nerve endings*
ADRENALIN
EPHEDRINE
COCAINE

(c) *Drugs acting on the third nerve nucleus*
ETHER.
CHLOROFORM

2 Myotics.

Drugs causing contraction of the pupil

(a) *Stimulation of the third nerve endings*
PILOCARPINE.
PHYSOSTIGMINE.

(b) *Drugs acting on the third nerve nucleus*
OPIUM and MORPHINE.

(C) DRUGS ACTING ON THE HEART

1 Cardiac Stimulants.

Drugs which increase the force of contraction
DIGITALIS and DIGOXIN
STROPHANTHUS
SQUILL.
BARIUM SALTS
ADRENALIN
EPHEDRINE.

N.B.—Adrenalin and Ephedrine also increase the rate of the heart their action is on the myoneural junctions.

2 Cardiac Depressants.

Drugs which decrease the force of the beats and slow the rate of the heart

ACONITE.
CHLORAL HYDRATE.
HYDROCYANIC ACID
CHLOROFORM (in large doses)
PILOCARPINE.
PHENACETIN
PHENAZONE.
ARSENIC.
QUINIDINE.

N.B.—Drugs mentioned in the preceding pages as medullary stimulants will produce slowing of the heart due to stimulation of the vagus centre. Many drugs such as ether ammonia, produce reflex acceleration of the heart

(D) DRUGS ACTING ON THE VESSELS

1 **Vaso-Dilators.**

Drugs causing dilatation of vessels

AMYL NITRITE.
SODIUM NITRITE
NITROGLYCERIN
ERYTHROL TETRANITRATE
SPIRITUS ÆTHERIS NITROSI
ATROPINE and HYOSCYAMUS
ARSENIC.
ANTIMONY
HISTAMINE

The last three drugs produce dilatation of the capillaries the others act on the arterioles.

2 **Vaso-Constrictors.**

Drugs causing constriction of vessels

ADRENALIN
EPHEDRINE.
PITUITARY EXTRACT
ERGOT
PILOCARPINE.
PHYSOSTIGMINE.

N.B.—Drugs mentioned in the preceding pages which stimulate the medulla will cause a general vaso-constriction by reason of stimulation of the vaso-motor centre medullary depressants cause vaso dilatation and a fall in blood pressure

(E) DRUGS ACTING ON THE RESPIRATORY SYSTEM

1 Expectorants

Drugs which assist in the expulsion of bronchial secretion

Ipecacuanha.
Squill.
Senega
Ammonium Carbonate.
Antimony and Potassium Tartrate
Turpentine
Balsams of Peru and Tolu
Apomorphine.
Potassium Iodide.

Most act by irritating the sensory ends of the vagus in the stomach and reflexly increasing the bronchial secretion Apomorphine acts centrally potassium iodide by making the bronchial secretion more fluid.

2. Antispasmodics.

Drugs decreasing or abolishing spasm of the bronchial muscle

Adrenalin
Ephedrine.
Atropine and Belladonna.
Hyoscyamus and Stramonium
Amyl Nitrite
Lobeline
Chloroform
Ether.

3 **Stimulants of the Respiratory Centre.**

STRYCHNINE.
CAFFEINE.
ATROPINE and BELLADONNA.
STRAMONIUM and HYOSCYAMUS.
CARBON *DIOXIDE*.
LEPTAZOL.
NIKETHAMIDE.
LOBELINE

The respiratory centre can also be reflexly excited by stimulation of sensory nerves. This is the mode of action of camphor and ether

4. **Depressants of the Respiratory Centre.**

OPIUM and MORPHINE.
HEROIN
CODEINE.
HYPNOTICS
ALCOHOL.
ETHER.
CHLOROFORM
HYDROCYANIC ACID
COCAINE.
ACONITE

Codeine and heroin have a marked depressant action on the cough centre and therefore diminish or abolish coughing

(F) DRUGS ACTING ON THE GASTRO-INTESTINAL TRACT

1 **Emetics.**

Drugs which cause vomiting

IPECACUANHA.
ANTIMONY and POTASSIUM TARTRATE.
AMMONIUM CARBONATE.
ZINC SULPHATE.
COPPER SULPHATE
SODIUM CHLORIDE.
APOMORPHINE.

Apomorphine has a central action on the vomiting centre all the others act locally on the stomach

2 Stomachics.

Drugs increasing the secretion of gastric juice

BITTERS
STRYCHNINE and NUX VOMICA.
MANY VOLATILE OILS
QUININE.
MUSTARD
PEPPER
ALCOHOL.
PILOCARPINE
HISTAMINE.

Most of these act reflexly by stimulating the gustatory nerve endings in the mouth alcohol acts directly on the stomach whereas pilocarpine stimulates the secretory fibres of the vagus. Histamine probably acts by stimulating the gastric glands

3 Drugs inhibiting Gastric Secretion.

ATROPINE.
OLIVE OIL.
ALCOHOL (large doses)

Atropine acts by paralysing the secretory fibres of the vagus olive oil and alcohol act directly on the stomach

4 Gastric Sedatives.

BISMUTH CARBONATE.
BISMUTH SALICYLATE
HYDROCYANIC ACID
PHENOL.
OPIUM

5 Carminatives.

Drugs which promote the expulsion of gas from stomach and intestines

BITTERS.
MANY VOLATILE OILS.
MOST STOMACHICS
VALERIAN
ASAFOETIDA.

6 Anti acids.

Drugs which neutralise the hydrochloric acid of gastric juice

MAGNESIUM BICARBONATE
MAGNESIUM OXIDE.
MAGNESIUM TRISILICATE.
SODIUM BICARBONATE
BISMUTH OXYCARBONATE
CALCIUM CARBONATE.

7 Purgatives.

(a) *Laxatives*

Drugs producing a mild purgative action

LIQUID PARAFFIN
SULPHUR.
OLIVE OIL.
AGAR AGAR.

(b) *The saline purgatives*

These act by increasing the bulk of fluid in the intestine

MAGNESIUM SULPHATE.
SODIUM SULPHATE.
SODIUM PHOSPHATE.
POTASSIUM ACID TARTRATE

(c) *Anthracene purgatives*

Purgatives which are derivatives of anthracene They act only on the large intestine.

SENNA.
ALOES
CASCARA SAGRADA.
RHUBARB

(d) *Drastic purgatives or cathartics*

JALAP
COLOCYNTH.
PODOPHYLLIN
SCAMMONY

These drugs act on both small and large intestine.

(*c*) *Other purgatives*

CASTOR OIL.
PHENOLPHTHALEIN
CALOMEL
MERCURY and CHALK.
PHYSOSTIGMINE.
PITUITARY EXTRACT

8 Intestinal Astringents

These act either by forming a protective coating on the mucous membrane—*e.g.*, bismuth—or by forming a protein coagulant—*e.g.* tannic acid.

BISMUTH SALTS
CATECHU
TANNIC ACID
KRAMERIA
HAMAMELIS
KAOLIN
LEAD SALTS.
PERSALTS OF IRON
ALUM.

9 Drugs producing Constipation.

ASTRINGENTS
OPIUM
BELLADONNA.
HYOSCYAMUS.
STRAMONIUM

Opium acts by causing spasm of the pyloric and ileo-colic sphincters the last three drugs inhibit peristaltic movement by their inhibitory action on the autonomic nervous system.

10 Cholagogues.

Drugs increasing the flow of bile

BILE SALTS.
MAGNESIUM SULPHATE.
MERCURY and CALOMEL.
SODIUM SALICYLATE
PODOPHYLLUM

Bile salts alone increase the secretion of bile most act by stimulating the upper part of the small intestine and so hurrying on the bile. Magnesium sulphate produces reflex evacuation of the gall bladder

(G) DRUGS ACTING ON THE URINARY SYSTEM.

1 Diuretics.

Drugs increasing the volume of urine secreted

- Potassium Nitrate.
- Potassium Citrate.
- Potassium Acetate.
- Potassium Acid Tartrate.
- Sodium Sulphate.
- Caffeine.
- Theobromine and Derivatives
- Urea.
- Urethanum
- Ammonium Chloride.
- Calcium Chloride.
- Digitalis.
- Squills
- Turpentine.
- Mersalyl.

2 Urinary Antiseptics.

- Hexamine.
- Benzoic Acid
- Boric Acid
- Copaiba.
- Sandal-wood Oil.
- Acriflavine.
- Mandelic Acid
- The Sulphonamides

(H) DRUGS ACTING ON THE SKIN AND MUCOUS MEMBRANES

1 Rubefacients

Drugs producing reddening of the skin due to dilatation of vessels. Many also produce blistering

VOLATILE OILS
TURPENTINE
CAMPHOR.
IODINE.
ACONITE.
CANTHARIDIN
MUSTARD

Many of these are counter irritants producing vascular changes in underlying viscera.

Diaphoretics.

Drugs which increase the secretion of sweat

POTASSIUM ACETATE.
POTASSIUM CITRATE.
AMMONIUM ACETATE
OPIUM
IPECACUANHA
PILOCARPINE
ACONITE
LOBELIA.

3 **Anhidrotics.**

Drugs which diminish the secretion of the sweat glands

ATROPINE
HYOSCYAMUS
STRAMONIUM

4 **Demulcents.**

Mucilaginous or emulsified substances used for the protection of mucous surfaces

TRAGACANTH
ACACIA.
LIQUORICE.
LINSEED
PARAFFINS.
OLIVE OIL.
COTTON-SEED OIL.
GLYCERIN
ALMOND OIL.

(I) DRUGS ACTING ON THE GENERATIVE SYSTEM

1 Emmenagogues

Drugs which increase the menstrual flow

- ECBOLICS
- ASAFŒTIDA
- MYRRH
- SUBSTANCES improving the general tone of the body such as iron and strychnine.

2. Ecbolics.

Drugs which stimulate the gravid uterus to contract

- ERGOT
- PITUITARY EXTRACT
- HISTAMINE.
- QUININE.
- BARIUM
- LEAD
- DRASTIC PURGATIVES
- ALOES
- TURPENTINE.
- CANTHARIDIN

Ergot and pituitary extract are the most valuable. Most will only produce their action when the uterus is in a specially irritable state—that is, just before term They occasionally bring about abortion in the earlier months pf pregnancy and hence are known as **Abortifacients.**

3 Aphrodisiacs.

Drugs which increase sexual power or desire

- ALCOHOL.
- CANTHARIDIN
- STRYCHNINE

4. Anaphrodisiacs.

Drugs which decrease sexual power or desire

- BROMIDES.
- BELLADONNA
- HYOSCYAMUS.
- STRAMONIUM
- OPIUM

(J) MISCELLANEOUS GROUP

1 Antiseptics and Disinfectants

Disinfectants are substances which kill micro-organisms whereas antiseptics inhibit their growth but do not kill them

PHENOL.
CRESOL.
CHLOROCRESOL.
TRINITROPHENOL.
MERCURY PERCHLORIDE
SILVER SALTS
CHLORINE.
CHLORAMINE.
THYMOL.
CREOSOTE.
BETANAPHTHOL.
ACRIFLAVINE.
PROFLAVINE
BORIC ACID
HYDROGEN PEROXIDE.
POTASSIUM PERMANGANATE
MANY VOLATILE OILS
IODINE.
IODOFORM
FORMALDEHYDE

2. Anthelmintics.

Drugs which destroy parasitic worms

QUASSIA
SANTONIN
FILIX MAS.
OIL OF TURPENTINE.
OIL OF CHENOPODIUM.
PELLETIERINE TANNATE
THYMOL.
CARBON TETRACHLORIDE

3 **Antipyretics.**

Drugs which lower the body temperature in fever the action is much less marked when the temperature is normal

PHENACETIN
PHENAZONE.
AMIDOPYRIN
ASPIRIN
SODIUM SALICYLATE
SALICIN
QUININE.
CINCHOPHEN
ACONITE.

N.B —Of these, the first four are analgesics—that is, they relieve pain.

APPENDICES

APPENDIX I

WEIGHTS AND MEASURES

IMPERIAL SYSTEM

Measures of Mass (Weights)

60 grains (gr.) = 1 drachm (dr.)
437·5 grains = 1 ounce (Avoir.) (oz.)
16 ounces (7 000 grs.) = 1 pound (Avoir.) (lb.)

Measures of Capacity (Volumes)

60 minims (min.) = 1 fluid drachm (fl. dr.)
8 fluid drachms = 1 fluid ounce (fl. oz.)
20 fluid ounces = 1 pint (pt.)

Relations of Volumes to Weights.

1 minim = the volume at 16·7° C. (62° F.) of 0·1146 grain of water

1 fluid drachm = the volume at 16·7° C. (62° F.) of 54·6875 grains of water

1 fluid ounce = the volume at 16·7° C. (62° F.) of 437·5 grains of water

109·7143 minims = the volume at 16·7° C. (62° F.) of 100 grains of water

METRIC SYSTEM

Measures of Mass (Weights)

1 milligramme (mg) =	0·001 gramme	= 0·015 grain.
1 centigramme (cg) =	0·01 gramme	= 0·154 grain.
1 decigramme (dg) =	0·1 gramme	= 1·543 grain.
1 gramme (G)		= 15·432 grains.
1 kilogramme (kg) =	1,000 grammes	= 2·2046 pounds

Measures of Capacity (Volumes)

1 centimil (cl.) = 0·01 mil	= 0·1689 minim.
1 decimil (dl.) = 0·1 mil	= 1·6894 minim.
1 millilitre or mil (ml.)	= 16·894 minims.
1 litre = 1·000 mils	= 35·1960 fl. oz.

N.B.—A millilitre is almost equivalent to 1 cubic centimetre, the difference being so small that it may be neglected.

Relation of Metric to Imperial Measures.

1 pound (Avoir.)	= 453·59 G
1 ounce (Avoir.)	= 28·359 G
1 grain	= 0·0648 G
1 litre	= 1·7598 pints or 35·196 fluid ounces
1 pint	= 568·245 mils or 0·568 litre
1 fluid ounce	= 28·4123 mils.
1 fluid drachm	= 3·5515 mils.
1 minim	= 0·0592 mil.
1 mil	= 16·9 minims.

N.B.—To convert grammes to grains multiply by 154 and cancel the last figure. To convert grains to grammes multiply by 65 and cancel the last three figures.

The following is given by the British Pharmacopœia, 1932 as approximate equivalents between metric and imperial measures

Mils (C. cm.)	Minims (fluid)	Mil (Grammes)	Grains (Grains)
10	150	0·03	½
8	120	0·025	⅜
6	90	0·02	⅓
5	75	0·016	¼
4	60	0·012	⅕
3	45	0·01	⅙
2·6	40	0·008	⅛
2	30	0·006	1/10
1·6 or 1·5	25	0·005	1/12
1·2 or 1·3	20	0·004	1/15
1	15	0·003	1/20
0·8	12	0·0025	1/25
0·6	10	0·002	1/30
0·5	8	0·0015	1/40
0·4	6	0·0012	1/50
0·3	5	0·001	1/60 or 1/65
0·25	4	0·0008	1/80
0·2	3	0·0006	1/100
0·15	2½	0·0005	1/120
0·12	2	0·0004	1/150
0·1	1½	0·00025	1/250
0·08	1¼	0·0002	1/300 or 1/320
0·06	1	0·00015	1/400
0·05	[illegible] or [illegible]	0·00012	1/500
0·04	[illegible]		

N.B.—The following recommendation appears in the British Pharmacopœia, 1932

Liquid medicines are often administered in teaspoonful dessertspoonful or tablespoonful doses as these quantities are convenient. As spoons vary greatly in capacity it is desirable that medicines should be measured in properly graduated measures. It would be preferable if the measure were graduated in mils, or in minims and fluid ounces instead of in teaspoonfuls dessertspoonfuls and tablespoonfuls.

APPENDIX II

DRUGS HAVING DOSES LESS THAN 1 GRAIN

Adrenalina 1/480–1/120
Hyoscinæ Hydrobromidum 1/400–1/100
Thyroxinsodium 1/250–1/50
Ergometrina 1/120–1/60
Strophanthinum 1/250–1/60
Atropina 1/120–1/60
Atropinæ Sulphas 1/120–1/60
Ergotoxinæ Æthanosulphas 1/120–1/60
Histaminæ Phosphas Acidus 1/120–1/60
Stilboestrol 1/120–1/60
Physostigminæ Salicylas 1/120–1/60
Homatropinæ Hydrobromidum 1/64–1/32
Apomorphinæ Hydrochloridum 1/64–1/32 (as an expectorant)
Carbacholum 1/64–1/16
Digoxin 1/80–1/16
Arseni Trioxidum 1/60–1/15
Hydrargyri Iodidi Rubrum 1/32–1/16
Hydrargyri Perchloridum 1/32–1/16
Antimonii et Potassii Tartras 1/24–1/8 } as diaphoretics.
Antimonii et Sodii Tartras 1/24–1/8 }
Apomorphinæ Hydrochloridum 1/20–1/8 (as an emetic)
Strychninæ Hydrochloridum 1/32–1/8
Diamorphinæ Hydrochloridum 1/24–1/6
Hydrargyri Oxycyanidum 1/12–1/4
Pilocarpinæ Nitras 1/20–1/2
Argenti Nitras 1/4–1/2
Arseni Triiodidum 1/16–1/4
Cocaina 1/4–1/2
Cocainæ Hydrochloridum 1/4–1/2
Morphinæ Hydrochloridum 1/8–1/2
Morphinæ Tartras 1/8–1/3
Amylocainæ Hydrochloridum 1/4–2/3
Pamaquinum 1/4–1/2

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